

Guidelines for Coding and Entering Ground-Water Data Into the Ground-Water Site Inventory Data Base Version 4.6, U.S. Geological Survey, Washington Water Science Center

Open-File Report 2006–1371

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By R.C. Lane

Open-File Report 2006–1371

**U.S. Department of the Interior
U.S. Geological Survey**

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Guidelines for Coding and Entering Ground-Water Data Into the Ground-Water Site-Inventory Database, Version 4.6, U.S. Geological Survey, Washington Water Science Center

By R. C. Lane

Abstract

This report establishes and documents the procedures used by the U.S. Geological Survey, Washington Water Science Center, to code and enter ground-water data into the Ground-Water Site Inventory database of the U.S. Geological Survey's Ground Water Site Inventory System. These guidelines are consistent with Version 4.6 of the system, but will be updated as each new version becomes available.

Introduction

This report establishes and documents a formal and consistent set of procedure, practices, and standards for coding and entering ground-water data into the U.S. Geological Survey (USGS) Washington Water Science Center (WAWSC) Ground-Water Site Inventory (GWSI) database. Some definitions, standards, and practices in this document vary from those in the National Water Information System (NWIS) User's Manual (U.S. Geological Survey, 2005a). However, this report takes precedence over the NWIS User's Manual and is to be used by the WAWSC.

Entering and Verifying New Data into GWSI

The WAWSC Ground-Water Specialist is responsible for the overall quality control of the GWSI database, for providing training and technical assistance with the guidelines in this report, and for assuring that established procedures are followed. Project Chiefs are responsible for the coding, entry, and quality control of all ground-water data for their projects that are input to the GWSI database.

Prior to coding and entering data into GWSI, all field data should undergo the checks and review listed in Instruction Number 4 of Appendix 1b of the WAWSC Quality-Assurance Plan for Ground-Water Data (Drost, 2005). When project personnel need to input large quantities of data into GWSI, the WAWSC Ground-Water Specialist should be contacted for assistance. All readily available data for a ground-water site should be compiled and entered into the GWSI system using the **WAWSC Ground-Water Site Schedule, Form No. 9-1904-A**, ([appendix 1](#)) and at:

[<http://wwwdwatcm.wr.usgs.gov/uo/internal/wadmin/Projects/gw_WellCoding_form.pdf>](http://wwwdwatcm.wr.usgs.gov/uo/internal/wadmin/Projects/gw_WellCoding_form.pdf).

This form is referred to in this report as the "coding form."

The person who fills out the coding form will sign and date the "Coded by" line on the coding form. The completed coding form then will be passed to a second party who will enter the data on the coding form into the GWSI database. After all data have been entered, the person who entered the data will sign and date the "Entered by" line on the coding form.

WAWSC Standard and Practice is to code and enter as much of the data listed on the coding form as is readily available. However, the minimum required and recommended data elements are shown in [appendix 2](#) of this report.

2 Coding and Entering Ground-Water Data into the GWSI, v. 4.6, USGS, Washington Water Science Center

After all coding forms have been processed, the data should be retrieved from the GWSI database and verified against data on the coding form and the original field forms by a third party. The person who verifies the data will sign and date the “Verified by” line on the coding form. Also, the site should be plotted using the latitude/longitude data in GWSI and this plot should be compared to the field topographic map plot to check the accuracy of the locational and land-surface altitude data. The person who completes this task will sign and date the “Plotted by” line on the coding form.

Explanation and Use of Selected GWSI Terms

Site Package: includes (when available) the WAWSC coding form used to record data for a site, a paper copy of the Driller’s logs, original field sheets, copies of letters to or from the owner or driller, and other important documents such as maps, photos, site sketches, and water-quality results. All site-related documents in this package must be retained and are not to be destroyed or recycled for lack of space.

Coding refers to filling out the WAWSC coding form.

Entering refers to entering data into the GWSI database.

Site File (as used by the WAWSC) refers to the total GWSI data set for a site. Popular usage and the National NWIS manuals consigned this term to apply only to the Site Record portion of a site data set.

Data Elements or Components are individual data items related to a site.

Records are groups of related data elements or components.

Mandatory Fields must contain a valid entry or data for the site or record will not be stored in the GWSI database.

Conditional Fields must contain a valid entry only if a related, non-mandatory data field contains a valid entry.

Primary Keys are combinations of data elements that uniquely identify each individual site or data record in GWSI.

Secondary Keys are singular or combined data elements that facilitate retrieving data from the GWSI database.

Record Sequence Numbers are three-digit integers assigned to individual records to keep them in sequential order. The numbers need not be consecutive but must be sequential, and may be used only once in each record type.

WAWSC Standard and Practice is to assign Record Sequence Numbers using the format (001, 002, 003, etc).

Web-ready Flags indicate the status and availability of a site or data record for display on the World-Wide-Web (Web). Only records flagged with a ‘Y’ are made available on the Web. Currently, only selected data elements from the Site Record and Water-Level Data Records are displayed on the Web. The Web-ready flags also control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (USGS, 2005a).

WAWSC Standard and Practice is to insure all Site Record and Water-level data are available for Web display. However, project chiefs may delay posting selected data records to the Web to allow for the completion of data collection, analysis, and quality-control measures. Web-ready Flags for all other data records should be set at the default listed for the individual records.

Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY is the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter ‘01’ in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

Text fields may contain any combination of uppercase and lowercase letters (A-Z, a-z), numbers (0-9), spaces (), periods (.), commas (,), hyphens (-), single quotation marks (''), parentheses (), equal signs (=), ampersands (&), pound signs (#), plus signs (+), and backslashes (\).

Note: Asterisks (*) are reserved by the GWSI software to indicate the end of a data field and may not be used in text fields.

WAWSC Standard and Practice: Although text fields will accept lowercase letters, they should not be used.

Codes and their meanings appear on the WAWSC coding form and in the GWSI Query Support Files (accessed by typing “?” in the appropriate field on the GWSI data-entry screen). Any use of a code for “Other” should be explained in the Miscellaneous Remarks Record (C788).

References

Drost, B.W., compiler, 2005, Quality-assurance plan for ground-water activities: U.S. Geological Survey, Washington Water Science Center: U.S. Geological Survey Open-File Report 2005-1126, 27 p.

U.S. Geological Survey, 1974, Geological Survey Water-Supply Paper 1988, “Definitions of Selected Ground-Water Terms—Revisions and Conceptual Refinements”, 21 pages.

U.S. Geological Survey, 2005a, User’s Manual for the National Water Information System of the U.S. Geological Survey Ground-Water Site-Inventory System: U.S. Geological Survey Open-File Report Version 4.6, accessed October 1, 2006, at URL <http://wwwnwis.er.usgs.gov/nwisdocs4-6/gw/GW.user.book.html>

U.S. Geological Survey, 2005b, User’s Manual for the National Water Information System of the U.S. Geological Survey Water-Quality System: U.S. Geological Survey Open-File Report Version 4.6, available at URL<<http://wwwnwis.er.usgs.gov/nwisdocs4-6/qw/QW.user.book.html>>

Section 1—Site Record

The Site Record stores locational and general information about a site. A Site Record must be entered for each site before any other data records can be entered. The Primary Key for Site Records is a combination of Agency Code and Site Identification Number.

Subsection		Component Number
1.01	Agency Code	C004
1.02	Site Identification Number (Site ID)	C001
1.03	Project Number	C005
1.04	Station Name (Local Number)	C012
1.05	Station Type	C802
1.06	District	C006
1.07	Country	C041
1.08	State	C007
1.09	County	C008
1.10	Latitude	C009
1.11	Longitude	C010
1.12	Accuracy	C011
1.13	Method	C035
1.14	Datum	C036
1.15	Altitude	C016
1.16	Accuracy	C018
1.17	Method	C017
1.18	Datum	C022
1.19	Land-Net	C013
1.20	Topographic Setting	C019
1.21	Hydrologic Unit Code	C020
1.22	Drainage Basin Code	C801
1.23	Standard Time Zone Code	C813
1.24	Daylight Savings Time Flag	C814
1.25	Map Name	C014
1.26	Map Scale	C015
1.27	Agency Use	C803
1.28	National Water-Use Code	C039
1.29	Data Type	C804
1.30	Instruments	C805
1.31	Date Inventoried	C711
1.32	Remarks	C806
1.33	Site Type	C002
1.34	Web-ready Flag	C032
1.35	Data Reliability	C003
1.36	Date of Construction	C021
1.37	Use of Site	C023
1.38	Secondary Use of Site	C301
1.39	Tertiary Use of Site	C302
1.40	Use of Water	C024
1.41	Secondary Use of Water	C025
1.42	Tertiary Use of Water	C026
1.43	Aquifer Type	C713
1.44	Primary Aquifer	C714
1.45	National Aquifer	C715
1.46	Hole Depth	C027
1.47	Well Depth	C028
1.48	Source of Depth Data	C029

1.01 Agency Code (C004—Mandatory—Part of Primary Key—five character code): Enter the code that identifies the Agency that is the source of data for a site or that is responsible for entering data into GWSI. Agency Codes and their meanings appear in the GWSI Query Support Files (accessed by typing “?” in the appropriate field on the GWSI data entry screen).

WAWSC Standard and Practice: All ground-water sites are entered using Agency Code “USGS” which is pre-printed on the WAWSC coding form.

1.02 Site Identification Number (Site ID) (C001—Mandatory—Part of Primary Key—15-digit Integer): The Site ID for a ground-water site is a unique 15-digit integer formed from the initial latitude and longitude of the site (in degrees, minutes, and seconds) followed by a 2-digit sequence number. The first six digits of the Site ID are the value of latitude, the 7th through 13th digits are the value of longitude, and the 14th and 15th digits are a sequence number used to distinguish between sites at the same location. It cannot be too strongly emphasized that the 15-digit Site ID, once assigned, is used as a pure number and has no locational significance beyond representing the best location available at the time the Site ID was assigned. The latitude (C009) and longitude (C010) fields are used for locational information about the site.

1.03 Project Number (C005—Secondary Key—12-character text field): Enter the WAWSC Project Number assigned to the particular WASSC project that collected or entered data for the site.

WAWSC Standard and Practice: Project Numbers are based on the WAWSC account number and entered using the format ‘WA XXX YY’. Project Numbers also are entered in Other ID Records in the Miscellaneous Data Records, Section 4.0 of this report.

1.04 Station Name (Local Number) (C012—Mandatory—Secondary Key—24-character text field): For ground-water sites in Washington State, this field locates and identifies each individual site in terms of the site’s position within the Public Land Survey rectangular grid system for Washington State ([fig. 1](#)). Each Local Number must be unique and must be entered as it is to be printed.

Note: Surface-Water Station Names are entered into this field using Component C900 which is a 50-character text field. An entry to either C900 or C012 is entered into the first 24 spaces of both components by the GWSI software.

Examples of Local Numbers for ground-water sites in Washington State:

25N/43E-02K01 09N/03W-12G02:

- (a) The numbers preceding the slash (25N and 09N) indicate the township north of the Willamette Base Line.
- (b) The numbers and letters between the slash and the hyphen (43E and 03W) indicate the range east or west of the Willamette Meridian.
- (c) The numbers following the hyphen (02 and 12) indicate the section within the Range/Township.
- (d) The letters following the section (K and G) indicate the 40-acre quarter-quarter tract within the section.
- (e) The numbers following the quarter-quarter (01 and 02) are sequence numbers that indicate the order in which sites in the same quarter-quarter were identified for entry into the GWSI database.

WAWSC Standard and Practice: Sequence numbers may also be assigned so they are consistent with the numbers used by the well owner or another agency.

- (f) A suffix after the sequence number indicates that a well has been deepened (D1, D2...), reconditioned (R1, R2...), or is a nested piezometer (P1, P2...).
 - (g) The suffix S after the sequence number identifies a site as a spring rather than a well.
 - (h) Additional descriptive/normative words or phrases may be used as needed, but the three spaces following the Sequence Number are reserved for the suffixes described in (f) and (g) above.
 - (i) Although many other agencies and organizations in Washington State use a similar naming system, consistency of assigned local numbers between agencies should not be assumed.
 - (j) Local Numbers for ground-water sites located in States other than Washington are assigned in accordance with the rules and regulations of the State in which the site is located.
- WAWSC Standard and Practice** for a Well that has been deepened or reconditioned after initial construction.

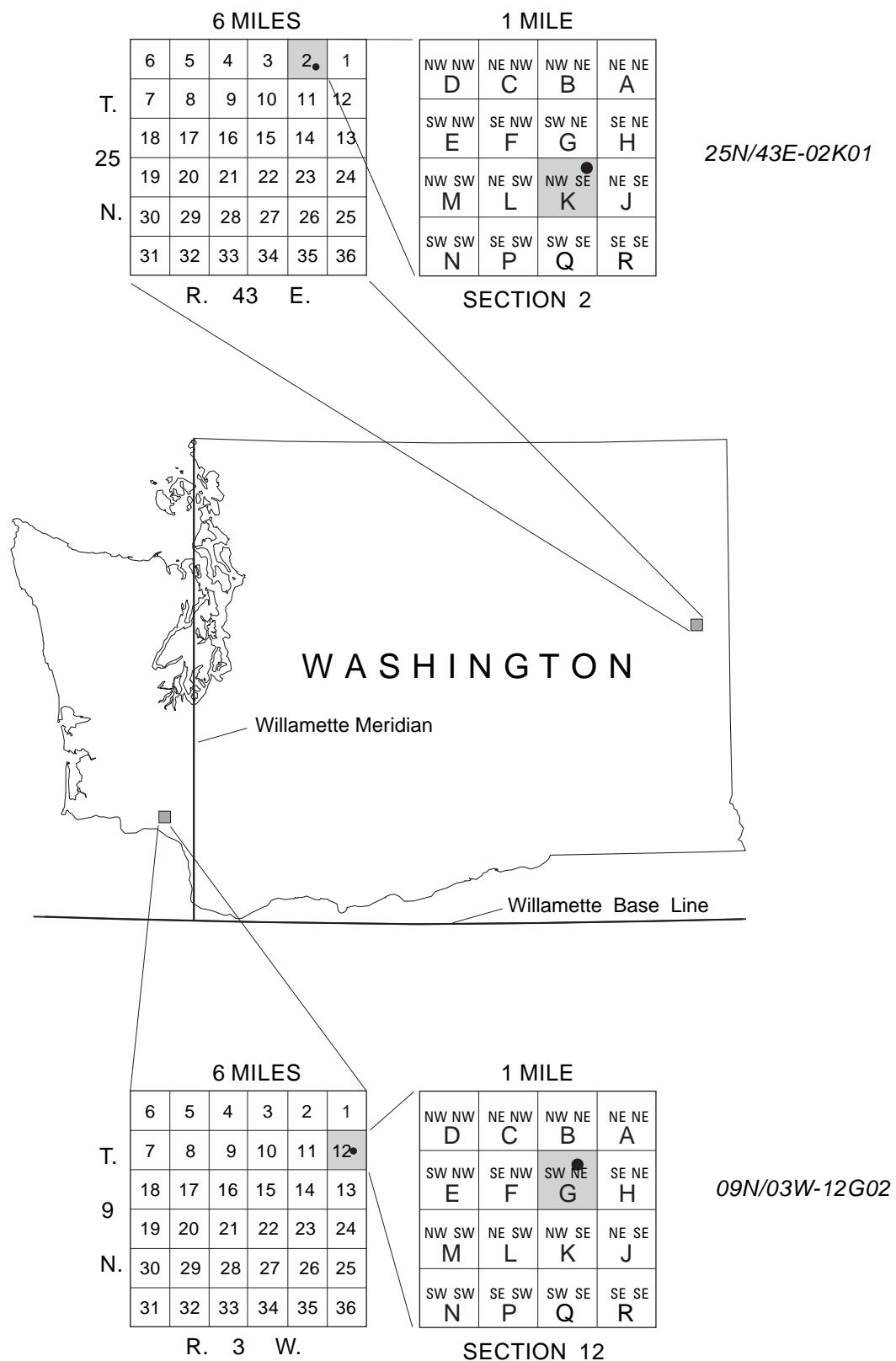


Figure 1. Ground-water site-naming system used in Washington.

- (1) Original Well is entered or modified as follows:
- Use of Site (C023) set to Z = Destroyed.
 - Use of Water (C024) set to U = Unused
 - Agency Use (C803) set to O = Inventory
 - Remarks (C806) should include a dated statement that the original well was deepened or reconditioned, and the new local number. The date should be that on which the deepening or reconditioning began.

Example: “06-23-946 well 25N/43E-02K01 destroyed by deepening, see well 25N/43E-02K01D1”.

- Water Level Status (C238) set to W = Destroyed.
- Name of Owner (C161) modified to indicate this was the ‘Original’ well.

Original Name: SMITH, HARRY (WELL 1)
New Name: SMITH, HARRY (WELL 1 – ORIGINAL)

- (2) Deepened Well is entered as a new site:

- New Site ID is the Site ID of the original well with the Sequence number increased by one digit or the next available sequence number).

Original Site ID: 474036119172301
New Site ID: 474036119172302

- Local Number is the same as the Local Number for the original well with a suffix added after the sequence number to indicate that the well has been deepened (D1) or reconditioned (R1).

Original Local Number: 25N/43E-02K01
New Local Number: 25N/43E-02K01D1

- The Owner’s Name will identify this site as a ‘Deepened’ or ‘Reconditioned’
Owner = SMITH, HARRY (WELL 1 - DEEPENED)

1.05 Station Type (C802—Mandatory—20-position array): The Station Type array identifies a ground-water site as either a “Spring” or a “Ground-water other than Spring”. To identify a site as a spring enter a “Y” in position 5 of the array. Enter a “Y” position 6 of the array for all other ground-water sites.

1.06 District (C006—Mandatory—three-digit integer code): Enter the two-digit code that identifies the Water Science Center (WSC) that collected or entered data for a site. The two-digit code must be entered into the first two positions of the field, and the third position must be left blank. (The third position allows a Water Science Center to indicate which Sub-district or Field Office collected data for a site). For most Water Science Centers this code is the same as the State Code. The few exceptions are the smaller adjacent States such as Maryland and Delaware that are combined into a single WSC.

Note: Locally important District Codes include: Idaho = 16, Oregon = 41, and Washington = 53.

1.07 Country (C041—Mandatory—Part of Secondary Key—two character code): Enter the two-character Federal Information Processing Standards (FIPS) alpha code for the Country in which the site is located. Country Code combines with State Code (C007) and County Code (C008) to form a secondary key.

Note: Locally important Country Codes include: United States = US and Canada = CN.

1.08 State (C007—Mandatory—Part of Secondary Key—two-digit integer code): Enter the two-digit Federal Information Processing Standards (FIPS) numeric code for the State in which the site is located. Include a leading zero if appropriate. State Code combines with Country Code (C041) and County Code (C008) to form a secondary key.

Note: Locally important State Codes include: Idaho = 16, Oregon = 41, and Washington = 53

1.09 County (C008—Mandatory—Part of Secondary Key—three-digit integer code): Enter the three-digit Federal Information Processing Standards (FIPS) numeric code for the county or county equivalent in which the site is located. County Code combines with Country Code (C041) and State Code (C007) to form a secondary key.

Note: A list and map of Washington State counties and their codes can be found at:

< <http://wa.water.usgs.gov/data/wuse/> >.

1.10 Latitude (C009—Mandatory—Secondary Key—nine-digit number): Enter the best available value for the latitude of the site. Latitude locates sites in terms of degrees, minutes, and seconds north or south of the Equator. Six digits must be coded; use leading zeros if needed. Values in the first and second positions represent degrees and are limited to values between 00 and 90. Values in the third and fourth positions represent minutes and are limited to values between 00 and 59. Values in the fifth and sixth positions represent seconds and are limited to values between 00 and 59. Seconds may be entered to two decimal places.

1.11 Longitude (C010—Mandatory—Secondary Key—ten-digit number): Enter the best available value for the longitude of the site. Longitude locates sites in terms of degrees, minutes, and seconds east or west of the Prime (Greenwich) Meridian. Seven digits must be entered; use leading zeros if needed. Values in the first, second, and third positions represent degrees and are limited to values between 00 and 180. Values in the fourth and fifth positions represent minutes and are limited to values between 00 and 59. Values in the sixth and seventh positions represent seconds and are limited to values between 00 and 59. Seconds may be entered to two decimal places.

Rules about Latitude and Longitude

- (1) A ground-water site is coded as if it is a single point, not a geographic area or property.
- (2) Latitude and longitude should be determined at a point believed to represent the location of the site. This point should also be where Altitude (C016) is determined.
 - (a) For a well-field, use the center of the field.
 - (b) For a drain, use the discharge point.
 - (c) For a tunnel, shaft, or mine, use the mouth of the structure.
- (3) Latitude and longitude should be determined and entered as precisely as possible in degrees, minutes, and seconds and their accuracy and the method used to determine them must be indicated by suitable entries in the Accuracy (C011) and Methods (C035) fields.
- (4) Latitude and Longitude should be updated as more precise information becomes available.
- (5) If the latitude of the site is south of the Equator, precede the latitude with a minus sign (-). The first position of the field is reserved for this sign.

Note: The world standard for polarity of latitudes assigns negative signs to latitudes south of the equator and positive signs to latitudes north of the equator.

WAWSC Standard and Practice: the WAWSC coding form does not include a space for the minus sign, but the GWSI software inserts a space to accommodate the possible need for one.

- (6) If longitude of the site is east of the Greenwich Meridian, precede the longitude with a minus sign (-). The first position of the field is reserved for this sign.

Note: The world standard for polarity of longitudes assigns negative signs to longitudes in the western hemisphere and positive signs to longitudes in the eastern hemisphere. In order to preserve the traditional entry of longitudes in the U.S., this convention is not followed for data entry of longitude (C010) in NWIS databases. However, the GWSI software assigns the appropriate sign for decimal longitudes (C910).

WAWSC Standard and Practice: the WAWSC coding form does not include a space for the minus sign, but the GWSI software inserts a space to accommodate the possible need for one.

1.12 Accuracy (C011—Mandatory—one-character code): Enter the code that best describes the accuracy of the values of latitude/longitude entered into components C009 and C010 above.

Code	Latitude/Longitude Accuracy (+/-)
H	0.01 second (differentially corrected DGPS)
1	0.1 second (standard uncorrected GPS)
5	0.5 second (Precise Positioning Service PLGR/PPS/GPS)
S	1 second
R	3 seconds (Standard Positioning Service SPS/GPS)
F	5 seconds
T	10 seconds
M	1 minute
U	Unknown

1.13 Method (C035—Mandatory—one-character code): Enter the code that best describes the method used to determine the values of latitude/longitude entered into components C009 and C010 above.

Code	Latitude/Longitude Method
C	Calculated from Land Net (Component C013)
D	Differentially corrected Global Positioning System (DGPS)
G	Global positioning system, uncorrected (GPS), Standard Positioning Service (SPS), or Precise Positioning Service (PLGR/PPS)
L	Long-range navigation system (LORAN)
M	Interpolated from topographic map
N	Interpolated from digital map
R	Reported - method unknown (Explain in Miscellaneous Remarks)
S	Transit, theodolite, or other surveying method
U	Unknown

1.14 Datum (C036—Mandatory—ten-character code): Enter the code that identifies the horizontal datum used to determine the values of latitude/longitude entered into components C009 and C010 above the values.

Code	Horizontal Datum
NAD27	North American Datum of 1927
NAD83	North American Datum of 1983
OLDAK	Old Alaska (Mainland) and Aleutian Islands Datum
OLDHI	Old Hawaii
OLDPR	Old Puerto Rico and Virgin Islands Datum
OLDSAMOA	Old American Samoa Datum
OLDGUAM	Old Guam Datum

WAWSC Standard and Practice: Requests for new datums will be submitted to the WAWCS Groundwater Specialist.

1.15 Altitude (C016—eight-digit number): For ground-water sites, enter the altitude of the land surface at the site in feet above or below the Altitude Datum specified in component C022. Altitudes above a datum are unsigned; altitudes below a datum are preceded by a minus sign (-). Altitudes may be entered to two decimal places.

Rules about Altitude

- (a) Altitude should be determined at the same point used to determine the Latitude (C009) and Longitude (C010) of the site.
- (b) Altitude should be determined and entered as precisely as possible in feet above or below the datum.
- (c) Altitude should be updated as more precise information becomes available.
- (d) Altitude is required if Water-Level Data Reference to Land Surface Datum (LSD) (C237) are to be entered.
- (e) An entry of Altitude requires accompanying entries of Altitude Accuracy (C018), Altitude Method (C017), and Altitude Datum (C022).

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1.16 Accuracy (C018—Conditional—three-character code): Enter the accuracy in terms of the possible error, in feet, of the Altitude entered in component C016. An accuracy of +/- 0.1 foot would be entered as “.1”. Altitudes interpolated from topographic maps generally have an accuracy of one-half of the contour interval. Altitude Accuracy is required when Altitude (C016) is entered.

1.17 Method (C017—Conditional—one-character code): Enter the code that best describes the method used to determine the Altitude entered in component C016 above. Altitude Method is required when Altitude (C016) is entered.

Code	Altitude Method
A	Altimeter
D	Differential Global Positioning System (DGPS)
G	Global Positioning System (GPS)
L	Level or other surveying method
M	Interpolated from topographic map
N	Interpolated from digital elevation model (DEM)
R	Reported - method unknown (Explain in Miscellaneous Remarks)
U	Unknown

1.18 Datum (C022—Conditional—ten-character code): Enter the code that identifies the vertical datum used to determine the Altitude of the land surface entered in component C016 above. Altitude Datum is required when Altitude (C016) is entered.

Code	Vertical Datum
NGVD29	National Geodetic Vertical Datum of 1929
NAVD88	North American Vertical Datum of 1988
OLDAK	Old Alaska (Mainland) and Aleutian Island Datum
OLDPR	Old Puerto Rico and Virgin Island Datum
HILOCAL	Local Hawaiian Datum
ASLOCAL	Local American Samoa Datum
GULOCAL	Local Guam Datum
COE1912	U.S. Army Corps of Engineers Datum 1912

WAWSC Standard and Practice: Requests for new datums will be submitted to the WAWCS Groundwater Specialist.

1.19 Land-Net (C013—23-characters code): Enter the legal description of the 10-acre tract in which the site is located. Use the abbreviations NE, NW, SE, and SW to identify the quarter-quarter-quarter (10-acre), the quarter-quarter (40-acre), and quarter (160-acre) sections. The smallest known subdivision is always listed first. “Meridian,” 5th principal meridian = 5, Boise meridian = B, Willamette meridian = W.

WAWSC Standards and Practice: Legal descriptions in Washington State only contain two abbreviations allowing a parcel to be identified down to the 40-acre quarter-quarter section. Therefore, users entering data for the Land-Net Component must leave the first two spaces blank.

Examples of Land-Nets for wells in Washington State

Local Well Number (C012)	Land-Net Location (C013)
25N/43E-02Q	SESWS02 T25N R43E W
09N/03W-12NE	NES12 T09N R03W W
44N/26E-36	S36 T44N R26E W

Note: Land-net for ground-water sites located in states other than Washington is assigned in accordance with the rules and regulations of the state in which the site is located.

1.20 Topographic-Setting (C019—one-character code): Enter the code that best describes the topographic features in the vicinity of the site.

Code	Topographic Feature
A	Alluvial fan: a low, outspread, relatively flat to gently sloping mass of loose rock material shaped like an open fan or a segment of a cone. It is deposited by a stream at a place where it issues from a narrow mountain valley upon a plain or broad valley.
B	Playa: a dried-up, vegetation-free, flat-floored area composed of thin, evenly stratified sheets of fine clay, silt or sand, and represents the bottom part of a shallow, completely closed or undrained desert lake basin in which water accumulates and is quickly evaporated, usually leaving deposits of soluble salts.
C	Stream channel: the bed in which runs a natural stream of water. It is the trench or depression washed or cut into the surface of the earth by the moving water that it periodically or continuously contains. This term includes washes, arroyos, and coulees.
D	Depression (local): an area that has no external surface drainage. Some depressions, such as those in the High Plains, are only a few acres in extent, but others may cover a square mile. Do not use this designation for small “interdune depressions” or those on an undulating surface of glacial drift (use U= Undulating). Do not use this term for large, closed basins, such as those on the Basin and Range province.
E	Dunes: mounds and ridges of windblown (eolian) sand. This term should not be used for an isolated mound unless it has a rather extensive area and is of hydrologic significance to the site.
F	Flat surface: may be part of a larger feature, such as an upland flat, mesa or plateau, coastal plain, lake plain, or pediment terrace and valley flat, which are special varieties of flat surfaces, and are classified separately.
G	Floodplain: the surface or strip of relatively smooth land adjacent to a river channel constructed by the present river in its existing regimen and covered with water when the river overflows its banks at times of high water.
H	Hilltop: the upper part of a hill or ridge above a well-defined break in slope. A site on the crest of an escarpment or top of a cuesta slope should be in this category. Also used for hills of significant height (such as drumlins) above a generally flat area, but not for small “swells” a few feet high on an undulating surface such as a till plain or valley flat.
K	Sinkhole: a special type of depression that results from the dissolving of soluble rocks (salt, gypsum, or limestone) and the subsequent collapse of the earth into the solution cavity. As such, it has special significance to the understanding of the hydrology in the vicinity of the site.
L	Lake or swamp: a body of inland water. However, this code is also used for swamps and marshes (i.e. areas where the ground may be saturated or water may stand above the land surface for a significant period of time).
M	Mangrove swamp: a tropical or subtropical marine swamp characterized by abundant mangrove trees.
O	Offshore: a coastal area or estuary that is continuously submerged.
P	Pediment: a plain of combined erosion and deposition that forms at the foot of a mountain range.
S	Hillside: the sloping side of a hill—that is, the area between a hilltop and valley flat. The important factor is the general aspect of the site. The steepness of the slope or height of the hill is not significant.
T	Terrace (alluvial or marine): a generally flat surface usually parallel to, but elevated above, a stream valley or coastline. Characteristically, steep slopes or escarpments separate the terrace from an adjacent upland on one side, and a lowland coast or valley on the other. Due to the effects of erosion, the terrace surface may not be as smooth as a valley flat, and may include undulating areas of dune sand or hill slopes within the general terrace area.
U	Undulating: area with many small depressions and low mounds. An undulating surface primarily is a depositional, not an erosional feature. The term should not be used for areas that have slightly irregular surfaces resulting from erosion.
V	Valley flat: a low flat area between valley walls and bordering a stream channel. It includes the flood plain, and is generally the flattest area in the valley. The surface may have a slight slope toward the main stream, toward the valley walls, or may be marked by valleys or smaller streams. Generally, the valley flat is separated from alluvial terraces and uplands by a pronounced break in slope. However, the outer edge of the valley flat may be obscured due to the deposition of colluvium eroded from the adjacent terraces and uplands. Use this code for sites in small valleys on a plain, if the site taps alluvium or the valley situation has hydrologic significance.
W	Upland draw: a small natural drainage way or depression, usually dry, on a hillside or upland.

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1.21 Hydrologic-Unit Code (HUC) (C020—Secondary Key—16-digit integer): Enter the eight-digit HUC that is identified with the site location. Eight-digit HUC's consist of four parts:

- (a) The first and second digits indicate the Hydrographic region code,
- (b) The third and fourth digits indicate the subregion codesesignated by the Water Resources Council,
- (c) The fifth and sixth digits indicate the accounting unit within the National Water-Data Network,
- (d) The seventh and eighth digits indicate the cataloging unit of the USGS “Catalog of Information on Water Data”.

WAWSC Standard and Practice is to code only the eight-digit HUC in the first 8 places of the field and leave the last eight places blank.

- (1) For sites that are in the United States but are not within a currently designated HUC, enter the eight-digit code 99999999.
- (2) For all sites not in the United States (C041 = US) leave this field blank.

Note: A list and map of HUC's for Washington State can be found online at:

< <http://wa.water.usgs.gov/data/wuse/> > .

1.22 Drainage-Basin Code (C801—Secondary Key—two-digit integer code): Enter the two-digit numerical code that identifies the Washington State Water Resource Inventory Area (WRRA) in which the site is located. Maps delineating the hydrographic boundaries of these units are available from the WAWSC Groundwater Specialist.

- (a) For sites that are not within a designated WRRA, enter the two-digit code “99” or leave blank.
- (b) For all sites not in Washington State (C007 = 53) leave this field blank.

Note: A list and map of WRRA's for Washington State can be found on line at:

< <http://wa.water.usgs.gov/data/wuse/> > .

1.23 Standard Time Zone Code (C813—Mandatory—six-character code): Enter the code for the time zone in which the site is located. Washington State is in the Pacific Standard Time Zone whose code (PST) is pre-printed on the WAWSC coding form. This field is validated by a reference list located at:

/usr/opt/nwis/support/reflists/tz .

A published version of this reference list is available in Appendix J of the QWDATA User Documentation (U.S. Geological Survey, 2005b).

1.24 Daylight Savings Time Flag (C814—Mandatory—one-character code): Enter a “Y” for “yes” or an “N” for “no” to indicate whether the site is in an area that switches between Local Standard Time and Daylight Savings Time for a part of the year.

Note: Washington State observes Daylight Savings Time and the code “Y” is pre-printed on the WAWSC coding form.

1.25 Map Name (C014—20-character text field): Enter the name of the best available map on which the site can be located. This map should be a USGS topographic quadrangle or equivalent. If no USGS map is available for the area, a county highway map or similar map may be used.

1.26 Map Scale (C015—seven-digit integer): Enter the scale of the map identified in Map Name (C014). Map scales are ratios of map distance to land distance. Thus, a map scale of 1:24,000 means that one unit of distance on the map is equivalent to 24,000 of the same units on the ground.

Rules for Map Scales

- (a) If the map scale is given as a ratio (1:24,000 or 1:62,000) enter only the number after the colon without the comma.
- (b) If the scale is given in inches per mile, as on many county highway maps, convert the given map scale to a ratio as follows:
 - (1) First express the scale as an equation such as: “2 inches on the map = 1 mile on the ground”.
 - (2) Convert both sides of the equation to the same units:
“2 inches on the map = 1 mile on the ground X (5,280 feet/mile) X (12 inches/foot)” or
“2 inches on the map = 63,360 inches on the ground”
 - (3) Reduce the equation to a ratio by dividing both sides by the number on the left.
“(2/2) inches on the map = (63,360/2) inches on the ground”, or
“1 inch on the map = 31,680 inches on the ground”, which converts to a scale of “1:31680”.
- (c) Common map scales

Scale	Enter
7 ½-minute quadrangle = 1:24,000	24000
15-minute quadrangle = 1:62,500	62500
1 inch equals 1 mile = 1:63,360	63360
2 inches equal 1 mile = 1:31,680	31680

1.27 Agency Use (C803—Secondary Key—one-character code): Enter the code that best describes the data collection activities by the Source Agency (C004) at the site. It is expected that this code will be changed when the use of the site changes.

Code	Use of Site
A	Active data-collection site
I	Inactive or discontinued data-collection site
O	Inventory data site only

1.28 National Water-Use Code (C039—two-character code): See [appendix 5. WAWSC Standard and Practice](#): The National Water-Use Code is not required for ground-water sites, usually is not coded or entered by the WAWSC, and does not appear on the WAWSC coding form.

1.29 Data Type (C804—30-position array): See [appendix 5. WAWSC Standard and Practice](#): Data Type Collected usually is not coded or entered by the WAWSC, and does not appear on the WAWSC coding form.

1.30 Instruments (C805—30-position array): See [appendix 5. WAWSC Standard and Practice](#): Instruments at the Site usually is not coded or entered by the WAWSC, and does not appear on the WAWSC coding form.

1.31 Date Inventoried (C711—eight-character date): Enter the date that the site was established, inventoried, or re-inventoried. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWISI software.

WAWSC Standard and Practice: If the date is not known, leave this field blank. Do not enter a place holder date (such as 01-01-1901).

1.32 Remarks (C806—50-character text field): This Remarks field stores a single significant remark about a site. Multiple remarks about a site are stored in the Miscellaneous Remarks Records (See [subsection 4.6](#)).

1.33 Site Type (C002—Mandatory for Ground-Water Sites—one-character code): Enter the code that best describes the type of site to which these data apply.

Code	Site Type
C	Collector or Ranney type well: a large-diameter well consisting of a concrete central casing, sealed at the bottom, with perforated pipes extending radially into an aquifer or under an adjacent body of surface water.
D	Drain: gravity-driven, nearly horizontal channel, pipe, conduit, or water-way dug to intercept the water table or potentiometric surface to either lower the ground-water level or serve as a water supply.
E	Excavation: a pit, cavity, hole, etc. from which ground water is obtained.
H	Sinkhole: a depression that results from the dissolving of soluble rocks (salt, gypsum, limestone) and the subsequent collapse of the earth into the solution cavity. As such, it has special significance to the understanding of the hydrology in the vicinity of the site.
I	<p>Interconnected or Connector wells: a group of wells in close proximity, linked through a common header, and for which there are little or no data about the individual wells.</p> <p>Note 1: The National User's Manual includes drainage wells (wells used to move surface water underground) in this category.</p> <p>WAWSC Standard and Practice is to include drainage wells only if they share a common header as in the basic definition.</p> <p>Note 2: National User's Manual limits use of this category to wells connected by an underground header.</p> <p>WAWSC Standard and Practice is to use this category for all wells that share a common header connection regardless if the header is above or below ground.</p>
M	<p>Multiple wells or Well Field: a group of wells in close proximity and for which there are little or no data about individual wells.</p> <p>Note: The National User's Manual states that these wells must share a common header.</p> <p>WAWSC Standard and Practice is to use this category for wells that do not have a common header and to use I = Interconnected for all wells that share a common header.</p>
O	Outcrop: rock formation that appears at land surface.
P	Pond: a pit or hole dug to intercept the water table or potentiometric surface to serve as a water
R	River Pump: a pump installed in a surface water source such as a river, lake, pond, canal, or ditch from which water is pumped for use. River Pump is not used for groundwater sites but is required for surface water sites..
S	Spring: a point on the land surface where ground water flows naturally from rocks or soil on to land
T	Tunnel, shaft, or mine or similar excavation used to obtain ground-water.
W	Well: an artificial excavation generally cylindrical in form and often walled in, sunk (drilled, dug, driven, bored, or jetted) into the ground to obtain minerals such as water, oil, or gas; for subsurface exploration; or for geohydrologic testing and observation. Use only for single wells other than of the Collector or Ranney type. Do not use for pits, holes, tunnels, ponds, or other excavations.
X	Test hole: a temporary, artificial excavation (pit, hole, tunnel) not completed as a well, sunk (drilled, dug, driven, bored, or jetted) into the ground to locate minerals such as water, oil or gas; for subsurface exploration; or for geohydrologic testing and observation. Test holes usually are destroyed after testing but may be converted to observation use.

1.34 Web-ready Flag (C032—Mandatory—one-character code): Enter the code that best indicates the status and availability of the Site Record for display on the Web. Only Site Records flagged with a “Y” are made available on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display
C	Conditional	Record not checked. No Web display (default)
N	Not Web-ready	Record has failed one or more data verification checks. No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Notes:

- (a) For the Site Record Web-ready Flag only: Status Codes “Y” and “N” are set by GWSI Data Checking software.
- (b) If the Site Record Web-ready Flag is not set to ‘Web-ready’ no data will be displayed on the Web.
- (c) If the Site Record Web-Ready Flag is set to ‘Web-Ready’ selected Site Record data will be displayed on the Web and the display of additional data will be controlled Web-Ready Flags for the individual records.
- (d) The Site Record Web-ready Flag also controls the availability of the Site Record data for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

1.35 Data Reliability (C003—Mandatory—one-character code): Enter the code that best describes the reliability of the Site Record data according to the reporting agency. When in doubt, always select the code that portrays the lesser confidence.

Code	Data Reliability (in descending order of confidence)
C	Data field checked and verified by the reporting agency.
L	Location not correct, other data may or may not have been field checked by reporting agency.
M	Minimal data available, data may or may not have been field checked by reporting agency.
U	Data not field checked by the reporting agency, but the reporting agency considers the data reliable.

1.36 Date of Construction (C021—eight-character date): Enter the date on which construction began at the site, or the earliest date for which data are available for the site, whichever is earlier. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year. If a Date of Construction is entered all other dates for the site are checked against this date and no data will be accepted if associated with an earlier date.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

WAWSC Standard and Practice: If this data is not available enter the date 01-01-1901.

1.37 Use of Site (C023—Mandatory for ground-water sites except springs -- one-character code): Enter the code that best describes the primary use of the site or the purpose for which the site was constructed (the former always takes precedence over the latter). If the site is used for more than one purpose, enter the principal use here and enter the subordinate uses in the Secondary and Tertiary Use of Site fields. Like Use of Water, Use of Site can change over time and the actual or current use should always take president over a former or intended use.

Code	Use of Site
A	Anode: used as an electrical ground for pipelines, electronic relays, power lines, or other installations.
C	Standby or Emergency supply: a water-supply source that is used only when the principal source of water is unavailable.
D	Drain: a drain, well, or other structure used to remove excess water from an area. Note: Above definition is WAWSC usage. The National User's Manual defines this use as "refers to the drainage of surface water to the subsurface."
E	Geothermal: used only for a dry geothermal power generation site where water is injected into the site for heating. Use of Site for a wet geothermal power generation site where water is withdrawn should be entered as "W – Withdrawal" and Use of Water should be "E - Power Generation".
G	Seismic: used solely for seismic exploration. If the site is used for observation, Use of Site should be "O" for Observation.
H	Heat reservoir: used to circulate a fluid (usually water) in a closed system. Water is neither added to, removed from, the aquifer system.
M	Mine: any tunnel, shaft, or other excavation constructed for the extraction of minerals.
O	Observation: used solely for long-term water-level or water-quality observations. Observation sites are commonly referred to as monitoring wells. Do not use this category for sites used primarily for another purpose, and only incidentally for water-level or water-quality data collection.
P	Oil or gas: used in the search or for production of, petroleum or gas. It includes any oil or gas production well, dry hole, core hole, or injection well drilled for secondary recovery of oil, etc. An oil-test hole converted to a water-supply well should be classified as "W - Withdrawal." Note: Washington State Law does not allow wells in this category to be converted to water supply use unless the well was originally constructed in accordance with the more stringent standards for a watersupply well.
R	Recharge: used to replenish an aquifer. Use this category for wells that are used to return water to an aquifer after use, such as those for returning air-conditioning water.
S	Repressurize: used to pump water into an aquifer in order to increase the pressure in the aquifer for a specific purpose, for example, water flood purposes in oil fields.
T	Test hole: used for sub-surface exploration, testing, or observation. The hole may be cased or uncased and temporarily equipped with a pump or other testing devices. Test holes are usually destroyed after testing but may be converted to observation use.
U	Unused: not currently in use and no use contemplated but site could be returned to use with only minimal effort such as providing power to the pump or installing a new pump. Category does not include wells that are in "off season" or other periods of temporary non-use.
V	Withdrawal/Return: used to both withdraw water for a purpose shown under Use of Water (C024) and to inject water into an aquifer during non-pumping periods. Does not include sites used for Drainage or Recharge where the sole purpose is to move water underground.
W	Withdrawal: used to supply water for one of the purposes shown under Use of Water.
X	Waste-disposal: used to convey industrial waste, domestic sewage, oil-field brine, mine drainage, radioactive waste, or other waste fluids into an underground zone.
Z	Destroyed/Abandoned/Decommissioned: site no longer in existence. The casing of most destroyed wells has been pulled, but may have been plugged or filled. Do not use this category for a site that merely is not in use.

1.38 Secondary Use of Site (C301—one-character code): If the site is used for more than one purpose, show the secondary use here by entering an appropriate code from the above list.

1.39 Tertiary Use of Site (C302—one-character code): If needed, a third use of the site can be shown here by entering an appropriate code from the above list.

1.40 Use of Water (C024—Secondary Key—one-character code): Enter the code that best describes the primary use of water from the site. If water from the site is used for more than one purpose, enter the principal use here and enter the subordinate uses in the Secondary and Tertiary Use of Water fields. Like “Use of Site,” “Use of Water” can change over time and the actual or current use always takes precedence over the former or intended use.

Code	Use of Water
A	Air-conditioning: solely to heat or cool a building. Water used to cool industrial machinery belongs in the industrial category
B	Bottling: water bottled for potable, non-therapeutic purposes. See Medicinal below. Note: Category applies only to the water in the bottle. Water used by the plant to bottle the water belongs in the Industrial category.
C	Commercial: used by facilities or establishments that provide goods or services such as retail sales stores, hotels, motels, restaurants, and office buildings.
D	Dewatering: water that is removed from an area to lower the ground-water level to allow use of the area for construction, mining, agricultural, or other purposes. If the main purpose for which the water is withdrawn is to lower the ground-water level, dewatering should be indicated even though the water may be used for some other purpose. Note: In Washington State, most agriculture areas are dewatered using drains (gravity-driven, nearly horizontal pipes or conduits). Non-agricultural areas usually are dewatered using interconnected wells. In both cases, the Use of Site would be as a Drain.
E	Power generation: the generation of any type of power, including cooling and boiler make up water.
F	Fire protection: used principally to provide fire protection, even though the site occasionally may be used as a supplement supply for other uses.
H	Domestic: used for household needs, such as drinking, food preparation, bathing, washing clothes and dishes, sanitary purposes, watering lawns and gardens, and caring for a few pets. Most domestic wells will be at suburban or farm homes, but wells supplying small quantities of water for domestic purposes for one-classroom schools, turnpike gates, and similar installations should be in this category.
I	Irrigation: used to assist in the growing or cultivation of plants. Most irrigation sites will supply water for farm crops and pastures but the category also includes water used to maintain vegetative growth at recreational and other facilities such as schools, industrial plants, cemeteries, golf courses, and parks. WAWS Standard and Practice is to include irrigation water systems and suppliers under this category.
J	Industrial cooling: used solely for cooling industrial machines.
K	Mining: used in extracting naturally occurring minerals, including solids such as coal and ores, liquids such as crude oil, and gases such as natural gas. Also includes water used in quarrying, well operations, milling, and other preparations customarily done at the mine site or as part of a mining activity. Does not include water used in processing, smelting, refining petroleum, or slurry pipeline operations which should be coded as Industrial Uses.
M	Medicinal: water purported to have therapeutic value. Water may be used for bathing and/or drinking. If the use is mainly because of its claimed therapeutic value, use this category even though the water is bottled. (See Bottling above).
N	Industrial: used by facilities that manufacture or fabricate a product. The water may be incorporated into the product or used for such purposes as processing, washing, maintenance, sanitation, cooling, or other purposes. Electric power generation, mining, and the extraction and processing of crude oil and gases are included in other water use categories.

Code	Use of Water
P	<p>Public Supply: withdrawn by a publicly or privately owned water supply system and delivered to 5 or more users for various purposes such as commercial, industrial, institutional, and domestic. The water supply system may be owned by a municipality or community, a water district, or a private concern. If the system supplies five or more homes, it should be considered a public supply, as four or less classify as domestic. Water supplies for trailer parks or summer camps with five or more living units should be in this category, but motels and hotels are classified as commercial. In most states, public water supplies are regulated by the State Department of Health which enforces minimum safety and sanitary standards.</p> <p>Notes:</p> <ul style="list-style-type: none"> (a) Class A Public Supply Systems deliver water to at least 25 people or to a minimum of 15 connections, and are subject to Federal, State, and Local regulations. (b) Class B Public Supply Systems deliver water to at most 24 people or have from 2 to 14 connections, and are subject only to State and Local Regulations only. (c) The USGS Water Use Program classifies all Class B Public Supply Systems as Domestic Use. (d) The GWSI system classifies Class B Public Supply Systems serving less than 5 homes as Domestic Use.
Q	Aquaculture: used in growing or rearing of plants or animals in water; in a confined space; and under controlled feeding, sanitation, and harvesting procedures. Includes water used by fish hatcheries and by fish farms.
R	Recreation: water discharged into pools or channels, which are dammed downstream to form pools, for swimming, boating, fishing, ice skating, or other recreational uses. Water used to irrigate golf courses and parks is coded as "I-Irrigation."
S	Stock: used in the rearing of livestock (other than fish) for the production of meat, milk, eggs, wool, and fur. Do not include on-farm uses such as domestic use, lawn and garden watering, or irrigation water use.
T	Institutional: used in the maintenance and operation of facilities such as large schools, universities, hospitals, rest homes, or similar establishments. Owners of institutions may be individuals, corporations, churches, or governmental units.
U	<p>Unused: water is not being removed from the site or water removed from the site is not being used for one of the purposes described on this list. Water removed from a test hole, oil or gas, recharge, or observation well will be in this category. Water from a newly constructed site not yet in use should be considered as unused.</p> <p>Note: Do not use this classification for a well in its "off season" or other temporary periods of nonuse.</p>
Y	<p>Desalination: the potable water produced by a desalting plant. Enter the Use of potable water under "Secondary Use of Water."</p> <p>Note: The Desalination Plant should be Classified under Use of Site = "W" for Withdrawal. Most Desalination Plants in Washington State process saline surface water to produce potable water, so this Use of Water will not appear very often in GWSI.</p>
Z	Other: miscellaneous uses not included in the listed categories (Explain in Miscellaneous Remarks).

1.41 Secondary Use of Water (C025—one-character code): If water from the site is used for more than one purpose, show the secondary use here by entering an appropriate code from the list above.

1.42 Tertiary Use of Water (C026—one-character code): If needed, a third use of water from the site can be shown here by entering an appropriate code from the list above.

1.43 Aquifer Type (C713—one-character code): Enter the code that best describes the type of aquifer(s) supplying water to the well.

Code	Aquifer Type
U	Unconfined single
N	Unconfined multiple
C	Confined single
M	Confined multiple
X	Mixed (confined and unconfined multiple)

1.44 Primary Aquifer (C714—Secondary Key—eight-character code): Enter the eight-character code that best identifies the primary aquifer unit from which water is obtained. Aquifer codes are given in the “Catalog of Aquifer Names and Geologic Unit Codes used by the Water Resources Division.” Codes are also available at:

/usr/opt/nwis/support/aageol.all.states .

1.45 National Aquifer (C715—ten-character code): Enter the ten-character code that best identifies the national aquifer (principal aquifer) from which water is obtained. National Aquifer Codes, their names, and descriptions are listed on the Aquifer Basics or Ground Water Atlas Web sites. GIS coverages, when available, are at:

[< http://water.usgs.gov/ogw/NatAqCode-reflist.html >](http://water.usgs.gov/ogw/NatAqCode-reflist.html)

Note 1: As of November, 2006, coverages for Washington State are available but are unreliable.

Note 2: In some areas of the State, aquifers overlap spatially and information beyond the latitude and longitude of a well will be required to assign the correct code.

1.46 Hole Depth (C027—eight-digit number): Enter the total depth, in feet below the land-surface at the site, to which the hole was drilled, even though the hole may have been plugged back in completing the well. Hole Depth may be entered to two decimal places but usually is entered in whole feet. If Hole Depth is entered, no other depth entered for the site may exceed Hole Depth.

Notes:

- (a) Hole Depth should be entered for all wells, whenever possible.
- (b) For Collector or Ranney-type wells, enter the depth of the central shaft.

1.47 Well Depth (C028—eight-digit number): Enter the depth, in feet below the land-surface datum, of the finished well. The depth of the well is the greatest depth to which the well can be sounded. If measurement is not practical, enter the reported depth at which the well was finished. Well Depth may be entered to two decimal places but usually is entered in whole feet.

Notes:

- (a) Well Depth should be entered for all wells, whenever possible.
- (b) For Collector or Ranney-type wells, enter the depth of the central shaft.
- (c) For multiple-well fields, interconnected wells, ponds, tunnels, or drains, leave this space blank and enter the depth in the Miscellaneous Data, Special Cases Records (C782).

1.48 Source of Depth Data (C029—one-character code): Enter code that best indicates how the information about the depth of the well was obtained.

Code	Source of Depth Data
A	Reported by other government agency - not owner *
D	Driller's log or report
G	Private geologist, consultant, or university associate*
L	Interpreted from geophysical logs by personnel of source agency
M	Memory (owner, operator, driller): less reliable than reported (“O” and “R”)*
O	Reported by the owner of the well
R	Reported by person other than the owner, driller, or another government agency*
S	Measured by personnel of reporting agency
Z	Other*

*Explain in Miscellaneous Remarks.

Section 2—Construction Data Records

Construction Data Records consist of eight Record Types that store data related to the physical characteristics of a ground-water site. Each Record Type may contain one or more individual Data Records. The Primary Key for Construction Data Records combines Agency Code (C004), Site ID (C001), Record Type Code, and Record Sequence Number.

Subsection	Component Name	Component Number
2.01	Agency Code	C004
2.02	Site ID	C001
2.03	Record Type	—
2.1	Construction Records (CONS)	C754
2.1.01	Record Sequence Number	C723
2.1.02	Date of Construction	C060
2.1.03	Name of Contractor	C063
2.1.04	Source of Data	C064
2.1.05	Method of Construction	C065
2.1.06	Type of Finish	C066
2.1.07	Type of Seal	C067
2.1.08	Bottom of Seal	C068
2.1.09	Method of Development	C069
2.1.10	Hours of Development	C070
2.1.11	Special Treatment	C071
2.1.12	Web-ready Flag	C850
2.2	Hole Records (HOLE)	C756
2.2.01	Parent Sequence Number	C059
2.2.02	Record Sequence Number	C724
2.2.03	Depth to Top of Interval	C073
2.2.04	Depth to Bottom of Interval	C074
2.2.05	Diameter of Interval	C075
2.2.06	Web-ready Flag	C851
2.3	Casing Records (CSNG)	C758
2.3.01	Parent Sequence Number	C901
2.3.02	Record Sequence Number	C725
2.3.03	Depth to Top of Casing	C077
2.3.04	Depth to Bottom of Casing	C078
2.3.05	Diameter of Casing	C079
2.3.06	Casing Material	C080
2.3.07	Casing Thickness	C081
2.3.08	Web-ready Flag	C852
2.4	Opening Records (OPEN)	C760
2.4.01	Parent Sequence Number	C902
2.4.02	Record Sequence Number	C726
2.4.03	Depth to Top of Interval	C083
2.4.04	Depth to Bottom of Interval	C084
2.4.05	Diameter of Interval	C087
2.4.06	Material Type	C086
2.4.07	Type of Opening	C085
2.4.08	Length of Opening	C089
2.4.09	Width of Opening	C088
2.4.10	Web-ready Flag	C853
2.5	Measuring-point Records (MPNT)	C766
2.5.01	Record Sequence Number	C728
2.5.02	Beginning Date	C321
2.5.03	Ending Date	C322
2.5.04	Height of Measuring Point	C323
2.5.05	Altitude of Measuring Point	C325

Subsection	Component Name	Component Number
2.5.06	Method Altitude Determined	C326
2.5.07	Altitude Accuracy	C327
2.5.08	Altitude Datum	C328
2.5.09	Remarks	C324
2.5.10	Web-ready Flag	C857

2.01 Agency Code (C004—Mandatory—Part of Primary Key—five-character code): This field is populated by the GWSI software with the Agency Code (C004) from the Site Record.

2.02 Site ID (C001—Mandatory—Part of Primary Key—15-digit integer): This field is populated by the GWSI software with the Site Identification Number (C001) from the Site Record.

2.03 Record Type (Mandatory—Secondary Key—four-character code): Record Type Codes identify the type of data included in each of the Construction Data Records.

Code	Record Type	Component Number
CONS	Construction data	C754
HOLE	Hole data	C756
CSNG	Casing data	C758
OPEN	Openings data	C760
MPNT	Measuring-point data	C766
LIFT	Lift and Pump data	C752
REPR	Minor Repair data	C762
SPNG	Spring data	C764

WAWSC Standard and Practice is to code and enter data only for Record Types CONS, HOLE, CSNG, OPEN, and MPNT which appear on the WAWSC coding form ([appendix 1](#)). LIFT, REPR and SPNG records do not appear on the WAWSC coding form but are available in GWSI if needed ([appendix 5](#)).

2.1 Construction Records (CONS) (C754—Mandatory—Part of Primary Key—four-character code): CONS records store data about the basic construction of a site and must be established before HOLE, CSNG, or OPEN records can be entered for a site.

2.1.01 Record Sequence Number (C723—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each CONS Record being coded and entered. This number becomes the Parent Sequence Number of any HOLE, CSNG, or OPEN Data Record associated with the individual CONS Records.

2.1.02 Date of Construction (C060—eight-character date): Enter the date on which all work at the site was completed. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year. For many sites, this date will be the same as the one entered as date of first construction (C021); however, it also must be entered here.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

WAWSC Standard and Practice: If the date is not known, enter the date that was entered in Date Constructed (C021) in the Site Record.

2.1.03 Name of Contractor (C063—12-character text field): Enter the name of the individual or company that did the work on the site. Meaningful abbreviations or acronyms may be used. Names for the same individual or company should be entered in a consistent manner (for example: Timothy Hogg Drilling, Tim Hogg Drilling, or Hogg Drilling should be entered in one consistent manner).

2.1.04 Source of Data (C064—one-character code): Enter the code that best describes how the construction data were obtained. These codes are the same as those used for Source of Depth Data (C029) in the Site Record.

Code	Source of Construction Data
A	Reported by other government agency – not owner *
D	Driller's log or report
G	Private geologist, consultant, or university associate*
L	Interpreted from geophysical logs by personnel of source agency
M	Memory (owner, operator, driller): less reliable than reported ("O" and "R")
O	Reported by the owner of the well
R	Reported by person other than the owner, driller, or another government agency*
S	Reported by personnel of reporting agency
Z	Other*

*Explain in Miscellaneous Remarks.

2.1.05 Method of Construction (C065—one-character code): Enter the code that best describes the method by which the site was constructed.

Code	Method of Construction
A	Air-rotary drilling uses a rotating length of pipe (drill stem) equipped with a bit that cuts or grinds earth materials while a stream of air is pumped down the drill stem to cool the bit and to carry cuttings to the surface in the annular space between the drill stem and the wall of the hole.
B	Boring or Auger drilling uses a screw-like drilling tool resembling a carpenter's bit, but much larger, to cut and remove unconsolidated earth materials from a hole. The boring tool may be powered by hand or machinery.
C	Cable-tool drilling uses a heavy drilling tool that is raised and lowered with enough force to pulverize earth materials in the hole. The pulverized debris is commonly removed from the hole with a bailer. Also known as "percussion" or "churn-drilling". The California mud-scow method is a special variation of the cable-tool method.
D	Digging (Dug) uses hand tools or power-driven digging equipment other than augers to excavate holes. Caissons, Collectors, Ranney-type wells, and galleries are included in this category, even though they may have laterals that are driven or jetted. Tunnels are also included in this category.
H	Hydraulic-rotary drilling uses a rotating length of pipe (drill stem) equipped with a bit that cuts or grinds the earth materials while a stream of water or drilling mud is pumped down the drill stem to cool the bit and to carry cuttings to the surface in the annular space between the drill stem and the wall of the hole.
J	Jet drilling uses a high-velocity stream of water pumped through a pipe having a restricted opening (orifice) to remove unconsolidated earth materials from the hole. For some types of earth materials a cutting bit is attached to the end of the jetting pipe. The material cut or washed from the hole is carried to the surface in the annular space outside the pipe. This method is most suitable for construction of small-diameter wells in unconsolidated material.
P	Air-percussion drilling uses a rotating length of pipe (drill stem) equipped with a bit that combines a rapid percussion effect with a rotary cutting and grinding action. Compressed air is pumped down the drill stem to drive and cool the cutting tool, and to carry cuttings to the surface in the annular space between the drill stem and the wall of the hole. Air-percussion drills are generally used in conjunction with air-rotary drilling rigs to drill through hard rocks.
R	Reverse-rotary drilling uses a rotating length of pipe (drill stem) equipped with a bit that cuts or grinds the earth materials. Water or drilling mud flows down the annular space between the drill stem and the wall of the hole to cool the bit and to carry cuttings to the surface through the drill stem.
T	Trenching refers to the construction of a sump or open pit from which ground water may be pumped. Trenching may be done by hand, but more commonly power equipment such as a bulldozer, dragline power shovel, or a backhoe is used. Ponds and drains belong in this category.

Code	Method of Construction
V	Driven wells are constructed by driving a length of pipe, usually of small diameter and generally equipped with a sand point, to the desired depth. The wells may be driven by hand or by power equipment such as an air hammer. The essential feature of a driven well is that no earth material is removed from the hole as the well is constructed.
W	Drive and wash wells are constructed by driving a small diameter open-end casing a few feet into the earth, then washing out the material from inside the casing with a jet of water. The process is repeated until the well has penetrated a sufficient depth into the aquifer.
Z	Other (explain in Miscellaneous Remarks)

2.1.06 Type of Finish (C066—one-character code): Enter the code that best describes how the well was finished or the nature of the openings that allow water to enter the well.

Code	Type of Finish
C	Porous concrete: concrete casing that is pervious enough to allow ground-water to seep into the well.
F	Gravel with perforations: well casing with holes or slots to admit water into the well and a gravel envelope opposite the interval of casing with the openings.
G	Gravel with screen: well completed with a commercial well screen designed to allow water into the well while preventing sediment from entering the well and a gravel envelope opposite the screen.
H	Horizontal well, gallery, or collector: any well in which a screen or perforated pipe essentially is horizontal. All horizontal wells should be in this class, including Ranney or Collector-type wells and infiltration galleries.
O	Open-end: well casing extends to the bottom of the hole so water can enter the well only through the bottom of the casing.
P	Perforated or slotted: well casing has holes or slots to admit water into the well. Perforated or slotted wells that have a gravel pack are coded "F".
S	Screened: well completed with a commercial well screen designed to allow water into the well while preventing sediment from entering the well. Common types of screen are wire mesh, wrapped trapezoidal wire, and shutter screen. Screened wells that have gravel pack are coded as "G".
T	Sand or well point: well is equipped with a commercial screening device equipped with a point at one end designed to be driven into the sand.
W	Walled or shored: a well (usually dug) in which the walls have been shored up with open-jointed fieldstone, brick, tile, concrete blocks, wood cribbing, gravel, or other material. A dug well that is mostly open-hole but has even a few feet of cribbing, corrugated pipe, or other shoring to prevent caving should be in this category.
X	Open-hole: well casing does not extend to the bottom of the well and the part of the well hole below the casing has not caved in or been backfilled so that water enters the well through the side walls of the uncased hole.
Z	Other (explain in Miscellaneous Remarks)

2.1.07 Type of Seal (C067—one-character code): Enter the code that best describes the type of material used to fill the annular space between the casing and the side of the hole to prevent the entry of surface water and other foreign material into the aquifer system.

Code	Seal Material	Code	Seal Material
B	Bentonite clay	N	None
C	Clay or drill cuttings	Z	Other (explain in Miscellaneous Remarks)
G	Cement grout		

2.1.08 Bottom of Seal (C068—four-digit integer): Enter the depth, to the nearest foot below land surface, to the bottom of the seal.

2.1.09 Method of Development (C069—one-character code): Enter the code that best describes the method used to repair damage to the aquifer formation caused by the drilling process and to increase performance of the well by increasing the permeability of the earth materials surrounding the intake portion of the well.

Code	Method of Development	Code	Method of Development
A	Pumped with air lift	N	None
B	Bailed	P	Pumped
C	Blown or surged with compressed air	S	Surged with surge block
J	Jetted or washed	Z	Other (explain in Miscellaneous Remarks)

2.1.10 Hours of Development (C070—three-digit number): Enter the number of hours that the well was bailed, pumped, and so forth, during development.

2.1.11 Special Treatment (C071—one-character code): Enter the code that best describes any special treatment that was applied during development of the well.

Code	Special Treatment	Code	Special Treatment
C	Chemical (acid and so forth)	H	Hydrofracturing
D	Dry ice	M	Mechanical abrasion
E	Explosives	Z	Other (explain in Miscellaneous Remarks)
F	Deflocculent		

2.1.12 Web-ready Flag (C850—Mandatory—one-character code): Enter the code that best describes the status and availability of the CONS record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for CONS records are set manually by the person entering the data and do not appear on the WAWSC coding form. CONS records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

2.2 Hole Records (HOLE) (C756—Mandatory—Part of Primary Key—four-character code): HOLE records store data about the hole in which a well or other ground-water site was constructed. A CONS record must be entered before a HOLE record can be entered.

2.2.01 Parent Sequence Number (C059—Mandatory—Part of Primary Key—three-digit integer): Enter the Record Sequence Number (C723) of the CONS record with which the HOLE record is associated.

2.2.02 Record Sequence Number (C724—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each individual HOLE record being coded and entered. Record Sequence Number “001” is always assigned to the interval of a hole that begins at the land surface. Additional Record Sequence Numbers should be assigned when the hole diameter or drilling method changes.

2.2.03 Depth to Top of Interval (C073—Mandatory—eight-digit number): Enter the depth, in feet below land surface, of the point where the interval of hole begins. HOLE depths may be entered to two decimal places but usually are entered in whole feet. The top of the first HOLE interval always begins at the land surface and its depth is entered as zero (0).

2.2.04 Depth to Bottom of Interval (C074—eight-digit number): Enter the depth, in feet below land surface, of the point where the interval of hole ends. HOLE depths may be entered to two decimal places but usually are entered in whole feet.

2.2.05 Diameter of Interval (C075—five-digit number): Enter the nominal diameter, in inches, of the bit used to drill the interval of hole or the diameter to which the interval was reamed. HOLE diameters may be entered to two decimal places but usually are entered in whole inches.

2.2.06 Web-ready Flag (C851—Mandatory—one-character code): Enter the code that best describes the status and availability of the HOLE record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked - No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for HOLE records are set manually by the person entering the data and do not appear on the WAWSC coding form. HOLE records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

2.3 Casing Records (CSNG) (C758—Mandatory—Part of Primary Key—four-character code) : CSNG records store data about the casing used to construct a well or other ground-water site. A CONS record must be entered before a CSNG Record can be entered.

2.3.01 Parent Sequence Number (C901—Mandatory—Part of Primary Key—three-digit integer): Enter the Record Sequence Number (C723) of the CONS record with which the CSNG record is associated.

2.3.02 Record Sequence Number (C725—Mandatory—Part of the Primary Key—three-digit integer): Enter a Record Sequence Number for each individual CSNG record being coded and entered. Starting at the land surface, Record Sequence Number “001” is assigned to the casing with the largest diameter. Additional Record Sequence Numbers should be assigned when the casing diameter, material, or thickness changes.

2.3.03 Depth to Top of Casing (C077—Mandatory —eight-digit number): Enter the depth, in feet below land surface, to the point where the section of casing begins. If the casing extends above land surface, the height of the casing above land surface is preceded by a minus sign (-). CSNG depths may be entered to two decimal places but are usually entered as whole feet.

2.3.04 Depth to Bottom of Casing (C078— eight-digit number): Enter the depth, in feet below land surface, to the point where the section of casing ends. CSNG depths may be entered to two decimal places but usually are entered in whole feet.

2.3.05 Diameter of Casing (C079— eight-digit number): Enter the nominal diameter, in inches, of the section of casing. CSNG diameters may be entered to two decimal places but usually are entered in whole inches.

Note: Casing diameters up to 12 inches refer to the inside diameter of the casing; diameters greater than 12 inches refer to the outside diameter of the casing.

2.3.06 Casing Material (C080— one-character code): Enter the code that best indicates the material from which the casing is made.

Code	Casing Material	Code	Casing Material
A	ABS Plastic	N	PVC Plastic (glued)
B	Brick	P	PVC Plastic
C	Concrete	Q	FEP Plastic
D	Copper	R	Rock or Stone
E	PTFE Plastic	S	Uncoated Steel
F	Fiberglass	T	Tile
G	Galvanized Iron	U	Coated Steel
H	Fiberglass Plastic	V	Stainless Steel
I	Wrought Iron	W	Wood
J	Fiberglass Epoxy	X	Carbon Steel
K	PVC Plastic (threaded)	Z	Other (explain in Miscellaneous Remarks)
L	Glass	4	Stainless Steel 304
M	Other Metal (explain in Miscellaneous Remarks)		

Note: Codes Casing Material for are not the same as Codes for Opening Materials in section 2.4.06 of this report.

2.3.07 Casing Thickness (C081—six-digit number): **WAWS Standard and Practice:** Casing thickness usually is not coded or entered and does not appear on the WAWS coding form ([appendix 1](#)).

2.3.08 Web-ready Flag (C852—Mandatory—one-character code): Enter the code that best describes the status and availability of the CSNG record for display on the World-Wide-Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked - No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for CSNG records are set manually by the person entering the data and do not appear on the WAWS coding form. CSNG records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

2.4 Opening Records (OPEN) (C760—Mandatory—Part of Primary Key—four-character code): OPEN records store data about the intervals of a well designed to allow water into the well. A CONS record must be entered before an OPEN record can be entered.

2.4.01 Parent Sequence Number (C902—Mandatory—Part of Primary Key—three-digit integer): Enter the Record Sequence Number (C723) of the CONS record with which the OPEN record is associated.

2.4.02 Record Sequence Number (C726—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each individual OPEN record being coded and entered. Record Sequence Number “001” is assigned to the open interval nearest the land surface. Additional Record Sequence Numbers should be assigned when the Opening diameter, material, or type changes.

2.4.03 Depth to Top of Interval (C083—Mandatory—eight-digit number): Enter the depth, in feet below land surface, to the point where the open interval begins. OPEN depths may be entered to two decimal places but usually are entered in whole feet.

2.4.04 Depth to Bottom of Interval (C084—eight-digit number): Enter the depth, in feet below land surface, to the point where the open interval ends. OPEN depths may be entered to two decimal places but usually are entered in whole feet.

2.4.05 Diameter of Interval (C087—five-digit number): Enter the nominal diameter, in inches, of the open interval. OPEN diameters may be entered to two decimal places, but usually are entered in whole inches.

2.4.06 Material Type (C086—one-character code): Enter the code that best describes the type of material from which a screen or open section is made.

Code	Openings Material	Code	Openings Material
A	ABS	N	PVC Plastic (glued)
B	Brass/Bronze	P	PVC Plastic
C	Concrete	Q	FEP Plastic
D	Ceramic	R	Stainless Steel
E	PTFE Plastic	S	Steel
F	Fiberglass	T	Tile
G	Galvanized iron	V	Brick
H	Fiberglass Plastic	W	Membrane
I	Wrought Iron	X	Carbon Steel
J	Fiberglass Epoxy	Y	Galvanized Steel
K	PVC Plastic (threaded)	Z	Other (explain in Miscellaneous Remarks)
L	Glass	4	304 Stainless Steel
M	Other Metal (explain in Miscellaneous Remarks)	6	306 Stainless Steel

Note: Codes for Opening Materials are not the same as Codes for Casing Material in section 2.3.06 of this report.

2.4.07 Type of Opening (C085—Mandatory—one-character code): Enter the code that best describes the type of openings in an open interval.

Code	Type of Openings	Code	Type of Openings
F	Fractured rock	S	Screen, type unknown
L	Louvered or shutter-type	T	Sand point screen
M	Mesh screen	W	Walled or shored
P	Perforated, porous, slotted	X	Open hole
R	Wire-wound screen	Z	Other (explain in Miscellaneous Remarks)

2.4.08 Length of Opening (C089—six-digit number): Enter the long dimension, in inches, of the individual perforations or slots. Lengths may be entered to two decimal places, but usually are entered in whole inches.

2.4.09 Width of Opening (C088—six-digit number): Enter the short dimension, in inches, of the individual perforations or slots, or the mesh size of screens. Widths may be entered to three decimal places.

2.04.10 Web-ready Flag (C853—Mandatory—one-character code): Enter the code that best describes the status and availability of the OPEN record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for OPEN records are set manually by the person entering the data and do not appear on the WAWSC coding form. OPEN records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

2.5 Measuring-Point Records (MPNT) (C766—Mandatory—Part of Primary Key—four-character code): MPNT records store data about places on or near a well from which water levels in the well can be measured. Entry of a MPNT record does not require prior entry of a CONS record.

2.5.01 Record Sequence Number (C728—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each individual MPNT record being coded and entered.

WAWSC Standard and Practice: MPNT Record Sequence Numbers can be assigned on the basis of the order in which measuring points were established, the priority of their use, or to match numbers assigned by the well owner or another agency.

2.5.02 Beginning Date (C321—eight-digit date): Enter the date on which the measuring point was established or the earliest date on which the measuring point was known to have been used. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

WAWSC Standard and Practice: If the date is not known, enter the date that was entered in Construction Date (C060) from the CONS record, or the earliest date on which water levels were known to have been measured using this Measuring Point.

2.5.03 Ending Date (C322—eight-digit date): If a measuring point (MP) can no longer be used, enter the date on which it was last used as a measuring point. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year. A MPNT Record should be entered for the new measuring point. In this way, a history of measuring point data corresponding to each water level can be maintained.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

WAWSC Standard and Practice: If the date is not known, leave this field blank.

2.5.04 Height of Measuring Point (C323—six-digit number): Enter the height, in feet, of the measuring point above or below land surface at the site. Heights above land surface are unsigned: heights below land surface are preceded by a minus sign (-).

WAWSC Standard and Practice: Heights of Measuring Points usually are measured and entered to one-decimal place.

2.5.05 Altitude of Measuring Point (C325—eight-digit number): Enter the altitude, in feet, of the measuring point above or below the Altitude Datum given in component C328. Altitudes above a datum are unsigned; altitudes below a datum are preceded by a minus sign (-). Altitudes may be entered to two decimal places. An entry of Altitude (C325) also requires the entry of Method Altitude Determined (C325), Altitude Accuracy (C327), and Altitude Datum (C328).

Note: MP Altitudes can be measured directly or calculated by adding Height of Measuring Point (C323) to Altitude of Land Surface (C016 in the Site Record). In either case, if a value for Altitude (C016) has been entered, Measuring Point Altitude (C325) must equal Altitude C016 + MP Height (C323).

2.5.06 Method Altitude Determined (C326—Conditional—one-character code): Enter the code that best describes the method used to determine Altitude of Measuring Point (C325). If the altitude was calculated by adding Height of Measuring Point (C323) and Altitude of Land Surface (C016), enter the method used to determine Altitude of Land Surface (C017 from the Site Record). Method Altitude Determined (C326) is mandatory if Altitude of Measuring Point (C325) is entered.

Code	Altitude Method
A	Altimeter
D	Differential Global Positioning System (DGPS)
G	Global Positioning System (GPS)
L	Level or other surveying method
M	Interpolated from topographic map
N	Interpolated from digital elevation model (DEM)
R	Reported (method unknown)
U	Unknown

2.5.07 Altitude Accuracy (C327—Conditional—three-digit number): Enter the accuracy of the Altitude entered in component C325 in terms of the possible error, in feet. An accuracy of +/- 0.1 foot would be entered as ".1". Altitudes interpolated from the contours on topographic maps generally are accurate to one-half of the contour interval of the map. If altitude was calculated by adding Height of Measuring Point (C323) and Altitude of Land Surface (C016), enter the Altitude Accuracy (C018) from the Site Record. Altitude Accuracy is mandatory if Altitude (C325) is entered.

2.5.08 Altitude Datum (Measuring Point Description C328—Conditional—ten-character code): Enter the code that identifies the vertical datum used to determine MP Altitude (C325). Altitude datum is mandatory when MP Altitude (C325) is entered.

Code	Altitude Datum
NGVD29	National Geodetic Vertical Datum of 1929
NAVD88	North American Vertical Datum of 1988
OLDAK	Old Alaska (Mainland) and Aleutian Island Datum
OLDPR	Old Puerto Rico and Virgin Island Datum
HILOCAL	Local Hawaiian Datum
ASLOCAL	Local American Samoa Datum
GULOCAL	Local Guam Datum
COE1912	COE Datum 1912

WAWSC Standard and Practice: Requests for new datums will be submitted to the WAWCS Groundwater Specialist.

2.5.09 Remarks (C324—94-character text field): Enter a detailed description of the measuring point. Meaningful abbreviations or acronyms may be used.

WAWSC Standard and Practice: MP descriptions always must start with the MP Number, and include the height of the MP above or below land surface.

Examples: “MP1, TOP OF CASING WEST SIDE AT ORANGE MARK, 2.0 FT ABOVE LSD”.
“MP2, TOC WEST SIDE AT NOTCH, 6.0 FT BLW LSD”

2.5.10 Web-ready Flag (C857—Mandatory—one-character code): Enter the code that best describes the status and availability of the MPNT record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for MPNT records are set manually by the person entering the data and do not appear on the WAWSC coding form. MPNT records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

Section 3—Water-Level Data Records (LEV)

Water-Level Data Records consist of three record types that store data and information about water levels measured in wells and similar ground-water sites. Each record type is identified by a Water-Level Entry Code and may contain one or more individual Water Level Records. The Primary Key for Water Level Records is a combination of Source Agency Code (C004), Site ID (C001), Measurement Date (C235), and Measurement Time (C709). Of these, Source Agency Code, Site ID, and Measurement Date are Mandatory. However, Measurement Time (C709) should be entered whenever it is readily available.

Subsection	Component Name	Component Number
3.01	Agency Code	C004
3.02	Site ID	C001
3.03	Measurement Date	C235
3.04	Time Water Level Measured	C709
3.05	Water-Level Entry Code	C243
3.1	Water Levels from Land Surface (LSD)	
3.1.01	Water Level from LSD	C237
3.1.02	Status	C238
3.1.03	Method of Measurement	C239
3.1.04	Reference	C240
3.1.05	Accuracy	C276
3.1.06	Source	C244
3.1.07	Party ID	C246
3.1.08	Source Agency	C247
3.1.09	Web-ready Flag	C858

3.01 Agency Code (C004—Mandatory—Part of Primary Key—five-character code): This field is populated by the NWIS Software with the Agency Code (C004) from the Site Record.

3.02 Site ID (C001—Mandatory—Part of Primary Key—15-digit integer): This field is populated by the NWIS Software with the Site Identification Number (C001) from the Site Record.

3.03 Measurement Date (C235—Mandatory—Part of Primary Key—eight-digit date): Enter the date on which the water level was measured. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

Note: If the day is not entered, only one water level can be entered for the month. Similarly, if the month and day are not entered, only one water level can be entered for the year.

However, multiple water levels for a partial date may be entered if the water levels have different Measurement Times.

3.04 Time Water Level Measured (C709—Part of Primary Key—four-digit integer): Enter the time of day, when known, using the 24-hour clock, at which the water level was measured. Leave blank if not known.

Note: If Measurement Time is not entered, only one water level can be entered for a date.

WAWSC Standard and Practice: Measurement Time (C709) should be entered whenever it is readily available.

3.05 Water-Level Entry Code (C243—Mandatory—one-character code): The Water Level Entry Code functions in much the same way as Record Type and allows the user to enter water levels referenced to different datums.

Code	Reference Datum
L	Land Surface (LSD)
M	Measuring Point (MP)
S	Sea Level (MSL)

Note: Only one water-level Entry Code may be entered for each date and time.

WAWSC Standard and Practice: All water levels are to be entered referenced to LSD. Projects wishing to enter water levels from an alternative datum must contact the WAWSC Ground-water Specialist for guidance and quality assurance purposes before entering data. See [appendix 5](#) for additional discussion on water levels referenced to MP and MSL.

3.1 Water Levels from Land Surface (LSD) (Water-Level Entry Code C243 = L): These record store water-level data referenced to the land surface datum (LSD) at a ground-water site.

3.1.01 Water Level from LSD (C237—Conditional—seven-digit number): Enter the water level, in feet from LSD at the site. Water levels below LSD are unsigned, water levels above LSD are preceded by a minus sign (-). Precision can be carried to two decimal places. An entry of Water Level from LSD requires the prior entry of Altitude (C016) in the Site Record.

Notes:

- (a) Water-level is mandatory unless associated with Status Codes C = Ice, D = Dry, F = Flowing, N = Discontinued, O = Obstruction, or W = Destroyed.
 - (b) If the water level is above LSD and water level was determined, enter the head or water level preceded by a minus sign (-) but do not enter a Status Code of “F” for Flowing.
 - (c) If the water level is above LSD but water level was not determined leave this field blank and enter a Status Code of “F” for Flowing.
 - (d) If the well was being pumped and the water level was determined enter the water level and record a Status Code of “P” for Pumping.
- Note:** The GWSI Entry Routine will not display a warning message, but the Edit and Update routines will generate a warning message that the water level and status may not be compatible.
- (e) If the well was being pumped and the water level was not determined leave this field blank and enter a Status Code of “P” for Pumping.

3.1.02 Status (C238—one-character code): Enter the code that best describes the status of the site or water level at the time the water level was measured. If no status is indicated, the reported water-level measurement is assumed to represent a static water level.

Code	Status
A	Water level affected by atmospheric pressure
B	Water level affected by tide stage
C	Water level affected by ice (water in well was frozen, no water level measured)
D	Site dry
E	Site recently flowing
F	Site flowing
G	Nearby site tapping same aquifer flowing.
H	Nearby site tapping same aquifer recently flowing
I	Water being injected into the aquifer (Injector site).
J	Water being injected into the aquifer at a nearby site Note: The National User’s Manual limits use of this status to Injector site monitor wells.
M	Well plugged and not in hydraulic contact with aquifer
N	Measurement discontinued

Code	Status
O	Obstruction encountered in the well
P	Site being pumped
R	Site recently pumped
S	Nearby site tapping same aquifer being pumped
T	Nearby site tapping same aquifer recently pumped
V	Foreign substance present on surface of water in well
W	Well destroyed
X	Water level affected by nearby surface-water site
Z	Other conditions affected the measured water level (explain in Miscellaneous Remarks)

Notes:

- (a) Water Level cannot be entered with Status codes C = Ice, D = Dry, F = Flowing, N = Discontinued, O = Obstruction, or W = Destroyed.
- (b) Water Level is allowed but may not be compatible with Status code P = Pumping.
Note: The GWSI Entry Routine will not display a warning message, but the Edit and Update routines will generate a warning message that the water level and status may not be compatible.
- (c) Water Level is required for all status codes except those listed above in notes (b) and (c).
- (d) Statistics generated during some tabling options will not include water levels where a status code is indicated.

3.1.03 Method of Measurement (C239—Mandatory—one-character code): Enter the code that best describes how the water level was measured.

Code	Method of Measurement	Code	Method of Measurement
A	Airline	M	Manometer
B	Analog or graphic recorder	N	Non-recording gage
C	Calibrated airline *	O	Observed**
E	Estimated	R	Reported, method not known
F	Transducer	S	Steel-tape
G	Pressure-gage	T	Electric-tape
H	Calibrated pressure-gage *	V	Calibrated electric tape*
L	Interpreted from geophysical logs	Z	Other (explain in Miscellaneous Remarks)

*Calibrated implies the accuracy of the method, equipment, or instrument has been checked and verified, usually by comparison to a concurrent water level measured with a steel tape.

**Required for Status Codes F = Flowing, N = Discontinued, and W = Destroyed: allowed for all others.

3.1.04 Reference (C240—one-character code): If the water level was obtained from a continuous recorder (analog or digital), enter the code that best indicates how the value was selected from the readings available for that day.

Code	Water level entered is the:
M	Daily maximum (deepest water level for the day)
N	Daily minimum (shallowest water level for the day)
X	Daily mean.
Z	Monthly mean
A	12:00 noon reading
P	12:00 midnight reading

Note: Reference (C240) does not appear on the WAWSC coding form.

3.1.05 Accuracy (C276—Conditional—one-character code): This field is populated by the GWSI Software on the basis of the number of significant figures entered for a new water level. However, this value may be over-ridden by manually entering a different accuracy code. This field is mandatory if Water Level (C237) is entered.

Code	Accuracy of water level
0	Nearest foot
1	Nearest tenth of a foot
2	Nearest one-hundredth of a foot
9	Not to nearest foot

Note: Starting with GWSI Version 4.4, water levels displayed on the Web (Web-ready Flag C858= Y) are rounded according to their Water-Level Accuracy Codes (C276). An Accuracy code of 9 indicates uncertainty greater than 1 foot but it does not imply any accuracy (such as to the nearest 5, 10, or 100 feet). Because there is no set accuracy associated with this code, water levels with this accuracy code are rounded to the nearest foot.

3.1.06 Source (C244—Mandatory—one-character-code): Enter the code that best describes the source of the water-level data. The codes are the same as those used for Source of Depth Data (C029) in the Site Record.

Code	Source of water-level data
A	Reported by other government agency - not owner
D	Driller's log or report
G	Private geologist, consultant, or university associate*
L	Interpreted from geophysical logs by personnel of source agency
M	Memory (owner, operator, driller): less reliable than reported ("O" and "R")*
O	Reported by the owner of the well
R	Reported by person other than the owner, driller, or another government agency*
S	Measured, Observed or Reported by personnel of reporting agency
Z	Other *

*Explain in Miscellaneous Remarks C788

3.1.07 Party ID (C246—six-character text field): For water-levels measured by USGS Personal enter the last name and initials, or the userid of the person who measured the water level. For water-levels measured by personnel from other agencies enter the abbreviation or acronym of the party's agency (See WAWSC Standard and Practice following Source Agency (C247) below).

3.1.08 Source Agency (C247—Mandatory—five-character code): Enter the Agency Code of the person who measured the water level. These are the same codes used for Source Agency (C004) in the Site Record. Codes and their meanings can be accessed by typing "?" in the field for Source Agency on the GWSI data entry screen.

WAWSC Standards and Practice: For water-levels measured by personnel from another agency enter Party ID (C246) and Source Agency as follows:

Name of Agency	Party ID C246	Source Agency C247
Washington Dept. of Ecology	WDOE	WA001
Washington Dept. of Health	WDOH	WA127
Washington Dept. of Natural Resources	WDNR	WA019
Driller	WDOE	WA001
Owner	OWNR	USGS

3.1.09 Web-ready Flag (C858—Mandatory—one-character code [licensing & reporting agency]): Enter the code that best indicates the status and availability of the Water-level Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for Water-level records are set manually by the person entering the data and do not appear on the WAWSC coding Form. These flags also control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey 2005a).

Section 4—Miscellaneous Data Records

Miscellaneous Data Records consist of eleven record types that store data and information about a ground-water site that do not relate to other data records. Each record type may contain one or more individual data records. The Primary Key for Miscellaneous Data Records combines Agency Code (C004), Site ID (C001), Record Type Code, and Record Sequence Numbers.

Subsection	Component Name	Component Number
4.01	Agency Code	C004
4.02	Site ID	C001
4.03	Record Types	—
4.1	Other ID Records (OTID)	C770
4.1.01	Record Sequence Number	C736
4.1.02	Other ID	C190
4.1.03	Assigner	C191
4.1.04	Web-ready Flag	C861
4.2	Visits Records (VIST)	C774
4.2.01	Record Sequence Number	C737
4.2.02	Date of Visit	C187
4.2.03	Name of Person	C188
4.2.04	Web-ready Flag	C863
4.3	Logs Records (LOGS)	C778
4.3.01	Record Sequence Number	C739
4.3.02	Type of Log	C199
4.3.03	Beginning Depth	C200
4.3.04	Ending Depth	C201
4.3.05	Source of Data	C202
4.3.06	Format of Data	C225
4.3.07	Log Location	C226
4.3.08	Web-ready Flag	C865
4.4	Other-Data-Available Records (OTDT)	C772
4.4.01	Record Sequence Number	C312
4.4.02	Other Data Type	C181
4.4.03	Other Data Location	C182
4.4.04	Format	C261
4.4.05	Web-ready Flag	C862
4.5	Owner Records (OWNR)	C768
4.5.01	Record Sequence Number	C718
4.5.02	Date of Ownership	C159
4.5.03	End Date of Ownership	C374
4.5.04	Type of Owner	C350
4.5.05	Name	C161
4.5.06	Alias	C360
4.5.07	Phone	C351
4.5.08	Access to Name	C352
4.5.09	Address (1)	C353
4.5.10	Address (2)	C354
4.5.11	City	C355
4.5.12	State	C356
4.5.13	Zip	C357
4.5.14	Country	C358
4.5.15	Access to Phone/Address	C359
4.6	Remarks Records (RMKS)	C788
4.6.01	Record Sequence Number	C311
4.6.02	Date of Remark	C184
4.6.03	Remark	C185
4.6.04	Web-ready Flag	C870

4.01 Agency Code C004—Mandatory—Part of Primary Key—five-character code): This field is populated by the GWSI software with the Agency Code (C004) from the Site Record.

4.02 Site ID (C001—Mandatory—Part of Primary Key—15-digit integer): This field is populated by the GWSI software with the Site Identification Number (C001) from the Site Record.

4.03 Record Type (Mandatory—four-character code): Record Type Codes identify the category of data included in the each of the Miscellaneous Data Records.

Code	Record Type	Component Number	Code	Record Type	Component Number
OTID	Other-identifiers	C770	OCNT	Contact	C797
VIST	Site-visits	C774	NETW	Networks	C780
LOGS	Logs	C778	SPEC	Special Cases	C782
OTDT	Other Data Available	C772	MSVL	Miscellaneous Values	C784
OWNR	Owner	C768	COOP	Cooperator's Data	C786
RMKS	Remarks	C788			

WAWSC Standard and Practice is to code and enter data only for Record Types OTID, VIST, LOGS, OTDT, OWRN, and RMKS which appear on the WAWSC coding form. The other five Record Types (OCNT, NETW, SPEC, MSLV, and COOP) are available (see [appendix 5](#)) if needed but do not appear on the WAWSC coding form ([appendix 1](#)).

4.1 Other ID Records (OTID) (C770—Mandatory—Part of Primary Key—four-character code): OTID Records store identification numbers and names assigned to a site.

4.1.01 Record Sequence Number (C736—Mandatory—Part of PRIMARY KEY—three-digit integer): Enter a Record Sequence Number for each OTID Record being coded.

WAWSC Standards and Practices: Selected Other ID Record Sequence Numbers are reserved for specific applications:

Numbers	Reserved for
001–009	USGS Project Numbers
010–019	USGS Networks/IDs
021	Washington State Department of Health Public Water Supply System ID
022	Washington State Department of Health Public Water Supply Source ID
031	Washington State Department of Ecology Unique Well ID Number
032	Washington State Department of Ecology Start Card Number
033	Washington State Department of Ecology Application Number
034	Washington State Department of Ecology Permit Number
035	Washington State Department of Ecology Certification Number
041–049	Owners Well Id and Names

4.1.02 Other ID (C190—Mandatory—15-character text field): Enter an ID number or name assigned to the site.

4.1.03 Assigner (C191—Mandatory—15-character text field): Enter the name of the person or organization that assigned the ID number or name to the site. Meaningful abbreviations or acronyms may be used. Care must be taken to ensure that an identical name, abbreviation, or acronym is used in all cases. Failure to do so will lead to problems in retrieving specific values from the record.

WAWSC Standards and Practices Minimum expected OTID entry is the current and previous Project Numbers (C005) and the Washington Department of Ecology Unique Well ID Number (if one has been assigned).

Record Sequence Number (C736)	Assigner (C191)	Name of Organization
001-009	USGS PROJECT ID	U.S Geological Survey
021	WDOH PWS SYSTEM	Washington State Department of Health
022	WDOH PWS SOURCE	Washington State Department of Health
031	WDOE UNIQUE ID	Washington State Department of Ecology
032	WDOE START CARD	Washington State Department of Ecology
033	WDOE APPLIC NUM	Washington State Department of Ecology
034	WDOE PERMIT NUM	Washington State Department of Ecology
035	WDOE CERTIF NUM	Washington State Department of Ecology

4.1.04 Web-ready Flag (C861—Mandatory—one-character code): Enter the code that best indicates the status and availability of the OTID Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked - No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for OTID Records are set manually by the person entering the data and do not appear on the WAWSC coding form. OTID Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

4.2 Visits Records (VIST) (C774 —Mandatory—Part of Primary Key—four-character code): VIST records store data about visits to the site for inventory or reinventory purposes. Routine visits for data collection need not be recorded here. This record is used to keep a history of the inventory activity at the site or an indication of the data's most recent reverification.

4.2.01 Record Sequence Number (C737—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each VIST Record being coded.

WAWSC Standard and Practice: The earliest known visit is assigned Record Sequence Number “001”.

4.2.02 Date of Visit (C187—Mandatory—eight-digit date): Enter the date on which the site was visited. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

4.2.03 Name of Person (C188—22-character test field): Enter last name and the initials of the person who made the site inventory or visit. Leave a space between the last name and initials and do not include periods. For example, Charlie Arthur Brown would be entered as “BROWN C A”.

WAWSC Standards and Practices

- (a) For USGS personnel, “name” is replaced by USGS.
- (b) For personnel from another agency “name” is replace by a meaningful abbreviation or acronym of the agency’s name.
- (c) Care must be taken to ensure that an identical name, abbreviation, or acronym is used in all cases.
- (d) The WAWSC Project Number under which the visit was conducted is placed after the agency code.

Examples:

USGS WA 002 28 WDOE WA 408 00

USCOE WA 9BI 00 WDOH WA 007 00

4.2.04 Web-ready Flag (C863—Mandatory—one-character code): Enter the code that best indicates the status and availability of the VIST Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display (default)

Note: Web-ready Flags for VIST Records are set manually by the person entering the data and do not appear on the WAWSC coding form. VIST Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

4.3 Logs Records (LOGS) (C778—Mandatory—Part of Primary Key—four-character code): LOGS records store data about the types of geophysical and other logs available for the site.

4.3.01 Record Sequence Number (C737—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each LOGS Record being coded.

WAWSC Standard and Practice: Driller’s Logs should be assigned Record Sequence Number “001”.

4.3.02 Type of Log (C199—Mandatory—two-character code): Enter the code that best describes the type of log.

Code	Type of Log	Code	Type of Log	
	ACOUSTIC			
AS	Sonic	MM	Magnetic	
AV	Acoustic velocity	MS	Magnetic susceptibility	
AW	Acoustic waveform	MI	Electromagnetic induction	
AT	Acoustic televiewer	MD	Electromagnetic dual induction	
	CALIPER			
CP	Caliper	MV	Radar direct-wave velocity	
CS	Caliper, single arm	MA	Radar direct-wave amplitude	
CT	Caliper, three arm		FLUID	
CM	Caliper, multiple arm	FH	Heat-pulse flow-meter	
CA	Caliper, acoustic	FE	Electromagnetic flow-meter	
	COMBINATION			
ZF	Gamma, fluid resistivity, and temperature	FA	Radioactive tracer	
ZI	Gamma and EM induction	FY	Dye tracer	
ZR	Long/short normal resistivity	FB	Brine tracer	
ZT	Fluid resistivity and temperature	FC	Fluid conductivity	
ZM	EM flow-meter, fluid resistivity, temperature	FR	Fluid resistivity	
ZN	Long/short normal resistivity spontaneous potential	FT	Fluid temperature	
ZP	Single-point resistance, spontaneous potential	FF	Fluid differential temperature	
		FV	Fluid velocity	
ZE	Gamma, long/short normal resistivity, spontaneous potential, single-point resistance, fluid resistivity, temperature	FS	Spinner flow-meter	
	DRILLING			
DT	Drilling time	NG	Gamma	
DR	Drillers	NS	Spectral gamma	
DG	Geologist	NA	Gamma-gamma	
DC	Core	NN	Neutron	
		NT	Neutron activation	
		NM	Nuclear magnetic resonance	
	ELECTRIC			
EE	Electrical	OV	Video	
ER	Single-point resistance	OF	Fisheye video	
EP	Spontaneous potential	OS	Sidewall video	
EL	Long-normal resistivity	OT	Optical televiewer	
ES	Short-normal resistivity		OTHER	
ET	Lateral resistivity	OR	Other (explain in Miscellaneous Remarks)	
EC	Micro-resistivity focused		WELL CONSTRUCTION	
EN	Micro-resistivity	WC	Casing collar	
EO	Micro-resistivity lateral	WD	Borehole deviation	
ED	Dip-meter			

WAWS Standards and Practices: The most commonly available logs in the WAWS GWSI database are DR = Drillers, EE = Electrical, DG = Geologist, and OR = Other. While all Log Types are available, only these four are pre-printed on the WAWS coding form.

4.3.03 Beginning Depth (C200—eight-digit number): Enter the depth, in feet below land surface, to the top of the logged interval.

WAWSC Standards and Practices: Beginning Depths may be entered to two-digit precision but usually are entered in whole feet.

4.3.04 Ending Depth (C201—eight-digit number): Enter the depth, in feet below land surface, to the bottom of the logged interval.

WAWSC Standards and Practices: Ending Depths may be entered to two-digit precision but usually are entered in whole feet.

4.3.05 Source of Data (C202— one-character code): Enter the code that best describes who provided the LOGS data. The codes are the same as those used for Source-of-Depth data (C029) in the Site Record.

Code	Source of Logs
A	Reported by other government agency - not owner*
D	Driller's log or report
G	Private geologist, consultant, or university associate*
L	Interpreted from geophysical logs by personnel of source agency
M	Memory (owner, operator, driller): less reliable than reported ("O" and "R")*
O	Reported by the owner of the well
R	Reported by person other than the owner, driller, or another government agency *
S	Reported by personnel of reporting agency
Z	Other *

*Explain in Miscellaneous Remarks

4.3.06 Format of Data (C225—one-character code): Enter the code that best describes the format in which the Log Data are stored.

Code	Format of Logs	Code	Format of Logs
F	Files (raw data)	P	Published (report or basic data release)
M	Machine readable	Z	Other (explain in Miscellaneous Remarks)

4.3.07 Log Location (C226—64-character text field): Enter a narrative description of the location of any additional geophysical logs data.

4.3.08 Web-ready Flag (C865—Mandatory—one-character code): Enter the code that best indicates the status and availability of the LOGS Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for LOGS Records are set manually by the person entering the data and do not appear on the WAWSC coding form but. LOGS Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

4.4 Other-Data-Available Records (OTDT) (C772—Mandatory—Part of Primary Key—four-character code): OTID records indicate the availability of additional data pertinent to the site

4.4.01 Record Sequence Number (C312—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each OTDT Record being coded.

4.4.02 Other Data Type (C181—Mandatory—38-character text field): Describe the type of other data available for the site. Use meaningful abbreviations, if needed.

4.4.03 Other Data Location (C182—one-character code): Enter the code that best describes the location of the other data.

Code	Location of Other Data	Code	Location of Other Data
C	Cooperator's office	R	Reporting agency office
D	USGS Water Science Center	Z	Other (explain in Miscellaneous Remarks)

4.4.04 Format (C261—one-character code): Enter the code that best describes the form in which the other data are stored.

Code	Format of Other Data	Code	Format of Other Data
F	Files (raw data)	P	Published (report or basic data release)
M	Machine readable	Z	Other (explain in Miscellaneous Remarks)

4.4.05 Web-ready Flag (C862—Mandatory—one-character code): Enter the code that best indicates the status and availability of the OTDT Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display (default)

Note: Web-ready Flags for OTDT Records are set manually by the person entering the data and do not appear on the WAWSC coding form. OTDT Records are not displayed on these Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

4.5 Owner Records (OWNR) (C768—Mandatory—Part of Primary Key—four-character code): OWRN records store data and information about the ownership of a site. Due to privacy consideration, OWRN data cannot be used in the GWSI Detail Testing Routine (U.S. Geological Survey, 2005a).

Note: USGS Policy is to not release Owner data for public water supplies or other sensitive installations and facilities to the general public.

WAWSC Standard and Practice is to not release any OWRN data to the general public.

4.5.01 Record Sequence Number (C718—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each OWRN Record being coded.

WAWSC Standard and Practice: The original owner is assigned Record Sequence Number “001”. Subsequent Record Sequence Numbers are assigned in the order of ownership.

4.5.02 Date of Ownership (C159—eight-digit date): Enter the date that the owner acquired ownership of the well, spring, etc., or the earliest date on which this owner was known to own the source. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note 1: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

Note 2: For a new well, Date of Ownership = Date of Construction (C060). If C060 is not known, Date of Ownership = Date of Construction (C021).

WAWSC Standards and Practices: Date of Ownership should be entered for all wells, whenever possible.

4.5.03 End Date of Ownership (C374—eight-digit date): Enter the date that the owner relinquished ownership of the well, spring, etc., or the earliest date on which this owner was known to have given up ownership. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

WAWSC Standards and Practices: End Date of Ownership usually is not coded and entered and does not appear on the WAWSC coding form.

4.5.04 Type of Owner (C350—Mandatory—two-character code): Enter the code that best describes the type of ownership.

Code	Type of Ownership
CP	Corporation: Owner is a legal entity composed of one or more individuals acting as a single person. A local or national company owning an industrial or commercial facility is an example. Non-profit natural land trusts and land conservancies should be coded as corporations. Corporations that are water suppliers should be coded as a water supplier.
GV	Government: Owner is a local, state, or federal agency including federal- or state-recognized Indian tribal governments and corporations wholly owned by tribal governments. (a) Agencies providing wastewater treatment (a municipal sewer authority) should be coded as government. (b) Agencies providing water supply (a municipal water authority) should not be coded as government but should be coded as a water supplier.
IN	Individual: Owner is an individual, or a group of individuals that is not a legal corporation.
OT	Other: The type of owner is something other than a water supplier, a corporation, individual, or government (explain in Miscellaneous Remarks C788). For example, private-public partnerships should be coded as “Other.” Use of Other should be avoided, if possible.
UN	Unspecified: The type of owner is unknown or unspecified.
WS	Water Supplier: Owner is a private or public entity that withdraws and/or distributes water to 25 or more residents or a minimum of 15 service connections.

4.5.05 Name (C161—Mandatory—64-character text field): Enter the name of the person or organization that owns the well or spring site.

- (a) The format for entering an individual's name is: last name, first name, middle initial.
- (b) Meaningful abbreviations or acronyms may be used for the names of organizations, companies, and agencies.
- (c) For entities that own multiple sites, care must be taken to ensure that the identical name, abbreviation, or acronym is used in all cases.
- (d) For entities that own multiple sites, individual sites should be identified by including the owner's well id or well number with the name.

Examples:

WASHINGTON STATE ECOLOGY (NAUGHTY FLATS WELL 2)
AVISTA UTILITIES (UPPER FALLS WELL MW-17)

- (e) If the site is used or leased by someone other than the landowner, the name and other information for the user or lessee should be entered in the Contact's Record.
- (f) If the land is used, leased, or occupied by someone other than the landowner, the name and other information for the user, lessee, or tenant should be entered in the Contact's Record (OCNT C797).

Note: Normally, the site owner and the landowner are the same entity. However, it is not unusual for sites such as monitoring wells to be on land not owned by the entity that owns (installed, maintains, or uses) the wells. In these cases, Owner's Name should be the entity that installed, maintains, or uses the well with the landowner's name entered in the Contact's Record.

WAWSC Standard and Practice: Include the landowner's name and site location in Address Line 1 (Need to also enter Access to Owner's Address C359).

Example:

Site Owner = U.S. GEOLOGICAL SURVEY (SMITH MW-1)
Address 1 = SMITH HOUSE, 12TH AVE & NEVER WAY

- (g) During screen entry when all or part of a new name is entered in the Name field (C161) previously entered versions of the name and associated alias (see below) appear at the bottom of the screen along with a prompt that allows the user to continue searching, select and enter a displayed name, or quit searching.

4.5.06 Alias (C360—64-character text field): This field is populated by the GWSI Software with information from the Owner's Name (C161).

- (a) During screen entry when all or part of new name is entered in the Owner's Name field (C161), previously entered versions of the name and associated alias appear at the bottom of the screen along with a prompt that allows the user to continue searching, select and enter a displayed name and alias, or quit searching.
- (b) During screen entry, the contents of Owner's Alias can be searched if the Owner's Name field (C161) is left blank and a carriage return is entered. The Alias prompt then appears at the bottom of the screen. If all or part of an Alias is entered, followed by a carriage return, previously entered versions of the Alias and the associated Name will be displayed at the bottom of the screen along with a prompt that allows the user to continue searching, select and enter a displayed name, or quit searching.

4.5.07 Phone (C351—24-character field): Enter owner's phone number, including area code and extension.

4.5.08 Access to Name (C352—Conditional—one-character code): Enter the code that best describes access to the owner's name. Entry of an access code is required if an Owner's Name was entered in Component C161.

Code	Access	Data available to
0	Public	USGS employees, cooperators, and the general public.
1	Cooperator	USGS employees and specified cooperators.
2	USGS	USGS employees only
3	District	USGS employees of the local Water Science Center (default).
4	Proprietary	Specific USGS employees only—check with Ground-Water Specialist before using.

Note: OWNR Name Records are not displayed on the Web and these codes control the availability of the data for retrieval by the GWSI Retrieval/Tabling Routine.

4.5.09 Address (1) (C353—64-character text field): Enter first line of owner's street address.

Note: Mailing and street addresses may be different.

WAWSC Standard and Practice (suggestion only): Rather than the exact street address, enter the nearest major road or intersection, and other locational information.

Examples:

Site Owner = U.S. GEOLOGICAL SURVEY (SMITH MW-1)

Address 1 = SMITH HOUSE, 12TH AVE & NEVER WAY

Site Owner = BONNEVILLE POWER ADMINISTRATION

Address 1 = PROSPECTOR WAY & MULE DRIVE, NORTH WELL

4.5.10 Address (2) (C354—64-character text field): Enter second line of owner's street address, if necessary.

4.5.11 City (C355—64-character text field): Enter the name of the city in the owner's street address.

4.5.12 State (C356—two-character code): Enter the two-character FIPS alpha code for the state in the owner's street address.

4.5.13 Zip (C357—ten-character code): Enter the postal zip code in the owner's street address.

4.5.14 Country (C358—48-character text field): Enter the country name in the owner's street address.

4.5.15 Access to Phone/Address (C359—Conditional—one-character code): Enter the code that best describes access to the owner's telephone number and street address. Entry of an access code is required if a Phone Number (C349) or Address (C353/354) was entered. Codes and their meanings are the same as for Access to Owner's Name (C352).

Code	Access	Data Available to
0	Public	USGS employees, cooperators, and the general public.
1	Cooperator	USGS employees and specified cooperators.
2	USGS	USGS employees only
3	District	USGS employees of the local Water Science Center (default).
4	Proprietary	Specific USGS employees only—check with Ground-Water Specialist before using.

Note: OWNR phone and address records are not displayed on the Web and these codes control the availability of the data for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

4.6 Remarks Records (RMKS) (C788—Mandatory—Part of Primary Key—four-character code): RMKS Records store meaningful data, information, or other pertinent comments about a site for which no specific field is available. Use this space to explain entries of “Other” in any coded fields on the schedule.

4.6.01 Record Sequence Number (C311—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each OCNT Record being coded.

WAWSC Standard and Practice: RMKS Record Sequence Numbers are assigned in the order that the records were coded and entered into the GWSI database.

4.6.02 Date of Remark (C184—eight-character date): Enter the date pertaining to the origin of the remark. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI Software.

4.6.03 Remark (C185—Mandatory—44-character text field): Enter the Remark exactly as it is to be stored and printed.

WAWSC Standard and Practice:

- (a) Begin each remark with the record type , record sequence number, and component number to which the remark relates.
- (b) If a single remark contains more than one line, begin subsequent lines with three blank spaces to highlight the beginning of each new remark.

4.6.04 Web-ready Flag (C870—Mandatory—one-character code): Enter the code that best indicates the status and availability of the RMKS Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display
C	Conditional	Record not checked - No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display (default)

Note: Web-ready flags for RMKS records are set manually by the person entering the data and do not appear on the WAWSC coding form. RMKS Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

Section 5—Discharge Data Records

Discharge Data Records (DISC) consist of a single record type that stores discharge and water-level data needed to estimate well performance for both flowing and pumped sites. The Primary Key for individual DISC records combines the Source Agency Code (C004), Site ID (C001), Record Sequence Number (C147), and the Date Discharge Measured (C148).

Subsection	Component Name	Component Number
5.01	Agency Code	C004
5.02	Site ID	C001
5.03	Record Sequence Number	C147
5.04	Date Discharge Measured	C148
5.05	Type of Discharge	C703
5.06	Discharge (gpm)	C150
5.07	Accuracy of Discharge	C310
5.08	Source of Discharge Data	C151
5.09	Method of Measurement	C152
5.10	Production Level	C153
5.11	Static Level	C154
5.12	Source of Level Data	C155
5.13	Method of Level Measurement	C156
5.14	Pumping Period	C157
5.15	Specific Capacity	C272
5.16	Drawdown	C309
5.17	Web-ready Flag	C859

5.01 Agency Code (C004—Mandatory—Part of Primary Key—five-character code): This field is populated by the GWSI software with the Agency Code (C004) from the Site Record.

5.02 Site ID (C001—Mandatory—Part of Primary Key—15-digit integer): This field is populated by the GWSI software with the Site Identification Number (C001) from the Site Record.

5.03 Record Sequence Number (C147—Mandatory—three-digit integer): Enter a Record Sequence Number for each DISC record being coded.

Note: More than one DISC record can be entered for a given date, and the same Record Sequence Number may be used with different dates.

5.04 Date Discharge Measured (C148—Mandatory—eight-character date): Enter the date on which the discharge data were collected. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

5.05 Type of Discharge (C703—Mandatory—one-character code): Enter the code that describes the type of discharge recorded in the record.

Code	Type of Discharge
P	Pumped
F	Natural Flow

5.06 Discharge (gpm) (C150—Mandatory—10-digit number): Enter the discharge from the site, in gallons per minute. Two decimal places are provided for very small discharges.

WAWSC Standard and Practice: enter Discharge to two significant digits. Although ten digits may enter, the WAWSC coding form shows only seven places.

5.07 Accuracy of Discharge (C310—one-character code): Enter the code that best describes the estimated accuracy of the discharge measurement.

Code	Accuracy of Discharge	Code	Accuracy of Discharge
E	Excellent (less than 2 percent)	G	Good (2–5 percent)
F	Fair (5–8 percent)	P	Poor (greater than 8 percent)

5.08 Source of Discharge Data (C151—one-character code): Enter the code that best indicates who furnished the discharge data. The codes are the same as those for Source of Depth Data (C029) in the Site Record.

Code	Source of Discharge Data
A	Reported by other government agency - not owner*
D	Driller's log or report
G	Private geologist, consultant, or university associate*
L	Interpreted from geophysical logs by personnel of source agency
M	Memory (owner, operator, driller): less reliable than reported ("O" and "R")*
O	Reported by the owner of the well
R	Reported by person other than the owner, driller, or another government agency*
S	Measured by personnel of reporting agency
Z	Other *

*Explain in Miscellaneous Remarks

5.09 Method of Measurement (C152—Mandatory—one-character code): Enter the code that best describes the method used to determine the discharge.

Code	Method
A	Acoustic transient-time meter
B	Bailer
C	Current meter = either propeller-type meter in the discharge pipe, or propeller- or cup-type meter in the discharge channel.
D	Doppler meter
E	Estimated
F	Flume
M	Totaling meter
O	Orifice
P	Pitot-tube meter, includes Cox meter, Collins meter, etc.
R	Reported, method not known
T	Trajectory (free-fall)
U	Venturi meter
V	Volumetric: bucket or barrel and stopwatch
W	Weir
X	Unknown
Z	Other (explain in Miscellaneous Remarks C788)

5.10 Production Level (C153—eight-digit number): Enter the water level, in feet below land surface, while the well was discharging. If the discharge is by natural flow, the production level (if measurable) is the water level above land surface preceded by a minus sign (-).

5.11 Static Level (C154—eight-digit number): Enter the static water level, in feet below land surface. If the static level is above land surface, enter the water level above land surface (if measurable) preceded by a minus sign (-).

5.12 Source of Level Data (C155—one-character code): Enter the code that best indicates who provided the water-level data. The codes are the same as those for Source of Discharge Data (C151 above) and for Source of Depth Data (C029) in the Site Record.

Code	Source of Level Data
A	Reported by other government agency—not owner*
D	Driller's log or report
G	Private geologist, consultant, or university associate*
L	Interpreted from geophysical logs by personnel of source agency
M	Memory (owner, operator, driller): less reliable than reported ("O" and "R")*
O	Reported by the owner of the well
R	Reported by person other than the owner, driller, or another government agency*
S	Measured by personnel of reporting agency
Z	Other *

*Explain in Miscellaneous Remarks

5.13 Method of Level Measurement (C156—one-character code): Enter the code that best describes the method by which the water levels were measured. If the static level and the production level were measured by different methods, record the method considered least accurate. The codes, except for U = Unknown, are the same as those used for Water-Level Method of Measurement (C239) Sub-section 3.1.03 in the Water-Level File.

Code	Method of Measurement	Code	Method of Measurement
A	Airline	M	Manometer
B	Analog or graphic recorder	N	Non-recording gage
C	Calibrated airline *	O	Observed
E	Estimated	R	Reported, method not known
F	Transducer	S	Steel-tape
G	Pressure-gage	T	Electric-tape
H	Calibrated pressure-gage *	V	Calibrated electric tape*
L	Interpreted from geophysical logs	Z	Other (explain in Miscellaneous Remarks)

*Calibrated implies the accuracy of the method, equipment, or instrument has been checked and verified, usually by comparison to a concurrent water level measured with a steel tape.

5.14 Pumping Period (C157—seven-digit number): Enter the length of time, in hours, that the well was pumped prior to the measurement of production level. One decimal place is provided for times shorter than one hour.

5.15 Specific Capacity (C272—eight-digit number): Enter the value of Specific Capacity in gallons per minute per foot of drawdown, for the discharging well. Specific Capacity is defined as the Discharge in gallons-per-minute (C150) divided by Drawdown, in feet (C516). If production or static levels are not known but a specific capacity value is available, record that value in this field. Precision may be carried to two decimal places. Specific capacity will be computed and stored by the GWSI software if Discharge (C150) and Drawdown (C309) are entered.

WAWSC Standard and Practice: enter Specific Capacity to two significant digits.

5.16 Drawdown (C309—eight-digit number): Enter the Drawdown, in feet, for the discharging well. Drawdown is defined as Static Level (C154) minus Production Level (C153). Drawdown will be computed and stored by the GWSI software if Production Level (C153) and Static level (C154) are entered.

5.17 Web-ready Flag (C859—Mandatory—one-character code): Enter the code that best describes the status and availability of the DISC record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for DISC Records are set manually by the person entering the data and do not appear on the WAWSC coding form. Disc Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

Section 6—Geohydrologic Data Records

Geohydrologic Data Records consist of two record types that store lithologic and hydrologic data about a site. Each record type may contain one or more individual data records. The Primary Key for Geohydrologic Data Records consists of Agency Code (C004), Site ID (C001), Record Type, and Record Sequence Number.

Subsection	Component Name	Component Number
6.01	Agency Code	C004
6.02	Site ID	C001
6.03	Record Type	—
6.1	Geohydrologic Records (GEOH)	C748
6.1.01	Record Sequence Number	C721
6.1.02	Depth to Top of Interval	C091
6.1.03	Depth to Bottom of Interval	C092
6.1.04	Unit Identifier	C093
6.1.05	Lithology	C096
6.1.06	Contributing Unit	C304
6.1.07	Lithologic Modifier	C097
6.1.08	Web-ready Flag	C871
6.2	Aquifer Records (AQFR)	C750
6.2.01	Parent Sequence Number	C256
6.2.02	Record Sequence Number	C742
6.2.03	Date	C095
6.2.04	Water Level	C126
6.2.05	Contribution	C132
6.2.06	Web-ready Flag	C872

6.01 Agency Code (C004—Mandatory—Part of Primary Key—five-character code): This field is populated by the GWSI software with the Agency Code (C004) from the Site Record.

6.02 Site ID (C001—Mandatory—Part of Primary Key—15-digit integer): This field is populated by the GWSI software with the Site Identification Number (C001) from the Site Record.

6.03 Record Type (Mandatory—four-character code): The Record Type code identifies the category of data included in each of the Geohydrologic records.

Code	Type of Record	Component Number
GEOH	Geohydrologic Data	C748
AQFR	Aquifer Data	C750

6.1 Geohydrologic Records (GEOH)—(CONS)—C748—Mandatory—Part of Primary Key—four-character code): GEOH Records store descriptive information and depth interval data about lithologic units at a site. GEOH records can be used to record as little as a single lithologic unit or as much as an entire log for the site.

6.1.01 Record Sequence Numbers (C721—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each GEOH Record being coded. This number becomes the Parent Record Number of any Aquifer Data Records (AQFR) associated with parent GEOH Record.

WAWS Standard and Practice: GEOH Record Sequence Number “001” is assigned to the coded/entered unit closest to the land surface.

6.1.02 Depth to Top of Interval (C091—eight-digit number): Enter the depth, in feet below land surface, to the top of the interval. Depths may be entered to two decimal places but usually are entered in whole feet. This field should be specified for all units in the hole.

Note: The interval need not be an entire formation or aquifer.

6.1.03 Depth to Bottom of Interval (C092—eight-digit number): Enter the depth, in feet below land surface, to the bottom of the interval. Depths may be entered to two decimal places but usually are entered in whole feet. This field should be specified for all units except the bottom most unit in the hole.

6.1.04 Unit Identifier (C093—Mandatory—eight-character code): Enter the eight-character code that best identifies the interval. Codes are listed in [appendix 3](#), and can be found in the NWIS software at:

< /usr/opt/nwis/support/aageol.all.states >.

WAWSC Standard and Practice: If the Unit Identifier is unknown one of the following general codes may be used:

Geologic Time	Unit Identifier	Geohydrologic Unit
Unknown	000FILL	UNCLASSIFIED FILL
Unknown	00OVBD	UNCLASSIFIED OVERBURDEN
Unknown	BEDROCK	BEDROCK (basalt etc)
Unknown	BASEMENT	BASEMENT (granite etc)

6.1.05 Lithology (C096—four-character code): Enter the code that best describes the principal earth materials of the interval (See [appendix 4](#)—Lithology Codes).

6.1.06 Contributing Unit (C304—one-character code): Enter the code that best describes the unit's actual contribution of water to the well. If this field is left blank, the GWSI edit program will populate this component with a default value of “U” and will print a warning message to that effect.

Code	Contributing Unit	Code	Contributing Unit
P	Principal contributing aquifer (only one per site)	Q	Aggregate of lithologic units
S	Secondary contributing aquifer	U	Unknown contribution
N	Contributes no water		

Note: If an interval is identified as the Principal Aquifer at a site Primary Aquifer (C714) in the Site Record must contain the same code as was entered as the Unit Identifier (C093).

6.1.07 Lithologic Modifier (C097—123-character text field): Enter a detailed adjective description of the earth material in the unit. This field is free form—there are no assigned codes. Meaningful abbreviations or acronyms (such as those listed under Lithology (C096) above) may be used.

WAWSC Standard and Practice: Rock material is to be described using the format ‘Type/
Lithology, color, particle size, hardness, water content.’

Example: for a saturated, coarse, well-packed, gray, sand.

Enter ‘SAND, GRAY, COARSE, WELL-PACKED, SATURATED’

6.1.08 Web-ready Flag (C871—Mandatory—one-character code): Enter the code that best describes the status and availability of the GEOH record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked - No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready flags for GEOH Records are set manually by the person entering the data and do not appear on the WAWSC coding form. GEOH Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

6.2 Aquifer Records (AQFR)—(C750—Mandatory—four-character code): AQFR records store hydrologic data about each lithologic unit at a site. A GEOH Record must exist for a unit before an AQFR Record can be entered.

6.2.01 Parent Sequence Number (C256—Mandatory—Part of Primary Key—three-digit integer): Enter the Record Sequence Number (C721) of the GEOH Record with which the AQFR Record is associated.

6.2.02 Record Sequence Number (C742—Mandatory—Part of the Primary Key—three-digit integer): Enter a Record Sequence Number for each AQFR Record being coded.

WAWSC Standard and Practice: AQFR Record Sequence Number “001” is assigned to the coded/entered unit closest to the land surface.

6.2.03 Date (C095—Mandatory—eight-character date): Enter the date on which the aquifer data were collected. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

6.2.04 Water Level (C126—seven-digit number): Enter the static water level in this unit, if known, in feet below land surface. If the water level is above land surface, enter the head above land surface preceded by a minus sign (-). Precision can be carried to two decimal places.

6.2.05 Contribution (C132—three-digit integer): Enter the percentage of the total yield of the well that is contributed by this unit, if known. If part of the water that the well would otherwise produce is lost to this unit, enter the percentage of the water lost preceded by a minus sign (-).

6.2.06 Web-ready Flag (C872—Mandatory—one-character code): Enter the code that best describes the status and availability of the AQFR record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked - No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center —No Web display

Note: Web-ready Flags for AQFR records are set manually by the person entering the data and do not appear on the WAWSC coding form. AQFR Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

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Appendix 1. Coding Forms

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Form No. 9-1904-A Revised October 2006

Coded by _____
 Checked by _____
 Entered by _____
 Verified by _____
 Plotted by _____

**U.S DEPT. OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON WATER SCIENCE CENTER
GROUND-WATER SITE SCHEDULE
General Site Data**

File Code _____
 Date _____

SITE RECORD

AGENCY CODE (C004)	U S G S	SITE ID (C001)											PROJECT NUMBER (C005)										
--------------------	----------------	----------------	--	--	--	--	--	--	--	--	--	--	-----------------------	--	--	--	--	--	--	--	--	--	--

STATION NAME (Local Number) C012

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STATION TYPE (C802)											Y = yes and blank = no entry	DISTRICT (C006)	5 3	COUNTRY (C041)	U S	STATE (C007)	5 3
---------------------	--	--	--	--	--	--	--	--	--	--	------------------------------	-----------------	------------	----------------	------------	--------------	------------

COUNTY (C008)											LATITUDE (C009)	.					LONGITUDE (C010)	.				
---------------	--	--	--	--	--	--	--	--	--	--	-----------------	---	--	--	--	--	------------------	---	--	--	--	--

ACCURACY (C011)	H 1 5 S R F T M U	METHOD (C035)	C D G L M N R S U	DATUM (C036)	NAD 27 NAD 83
-----------------	--------------------------	---------------	--------------------------	--------------	----------------------

hndrh tenth half sec 3 sec 5 sec 10 sec min un known	land net dgps gps loran topo digital re survey un known	North American Datum of 1927	North American Datum of 1983
--	---	------------------------------	------------------------------

ALTITUDE (C016)	.	ACCURACY (C018)	METHOD (C017)	A D G L M N R U	DATUM (C022)	NGVD 29 NAVD 88
-----------------	---	-----------------	---------------	------------------------	--------------	------------------------

altimeter dgps gps level map DEM re un reported known	National Geodetic Vertical Datum of 1929	North American Vertical Datum of 1988
---	--	---------------------------------------

LAND-NET (C013)	1/4 1/4 1/4 1/4 1/4	section	S	T	R	W
-----------------	---------------------	---------	---	---	---	---

1/4 section township range merid(s)

TOPOGRAPHIC SETTING (C019)	A B C D E F G H K L M O P S T U V W
----------------------------	--

alluvial fan playa stream channel depression dunes flat flood-plain hill-top sink-hole lake or swamp mangrove swamp off-shore pediment hill-side terrace undulating valley flat upland draw

HYDROLOGIC UNIT CODE (C020)											DRAINAGE BASIN CODE (C801)	STANDARD TIME ZONE CODE (C813)	DAYLIGHT SAVINGS TIME FLAG (C814)
-----------------------------	--	--	--	--	--	--	--	--	--	--	----------------------------	--------------------------------	-----------------------------------

MAP NAME (C014)											MAP SCALE (C015)						AGENCY USE (C803)
-----------------	--	--	--	--	--	--	--	--	--	--	------------------	--	--	--	--	--	-------------------

A I O

active inactive inventory only

DATE INVENTORIED (C711)	month	day	year
-------------------------	-------	-----	------

REMARKS (C806)

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

SITE TYPE (C002)	C D E H I M O P R S T W X	WEB-READY FLAG (C032)	C P L	DATA RELIABILITY (C003)	C L M U
------------------	----------------------------------	-----------------------	--------------	-------------------------	----------------

collector drain excavation hole inter-connected multiple out crop pond river spring tunnel well test hole	conditional proprietary local use only	field checked poor location minimal data un checked
---	--	---

DATE OF CONSTRUCTION (C021)	month	day	year
-----------------------------	-------	-----	------

USE OF SITE (C023)	A C D E G H M O P R S T U V W X Z	SECONDARY USE (C301)	TERtiary USE (C302)
--------------------	--	----------------------	---------------------

anode standby drain geo- thermal seismic heat reservoir mine observation oil or gas recharge resurize test unused withdraw/ return waste destroyed	conditional proprietary local use only	field checked poor location minimal data un checked
--	--	---

USE OF WATER (C024)	A B C D E F H I J K M N P Q R S T U Y Z
---------------------	--

air cond bottling com de-water power fire domestic irrigation industrial (cooling) mining medicinal industrial public aqua culture recreation stock institutional unused desalin ation other
--

SECONDARY USE WATER (C025)	PRIMARY AQUIFER (C714)	TERTIARY USE WATER (C026)
----------------------------	------------------------	---------------------------

U N C M X	NATIONAL AQUIFER (C715)
------------------	-------------------------

HOLE DEPTH (C027)	WELL DEPTH (C028)	SOURCE OF DEPTH DATA (C029)	A D G L M O R S Z
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other gov't driller geologist logs memory owner other reported reporting agency

Construction Data Records

CONSTRUCTION DATA								RECORD TYPE (C754)	C O N S	RECORD SEQUENCE NUMBER (C723)	DATE OF CONSTRUCTION (C060)	 	 	 	
NAME OF CONTRACTOR (C063)				SOURCE OF DATA (C064)				A D G L M O R S Z	month day year						
				other govt	driller	geologist	logs	memory	owner	other reported	reporting agency	other			
METHOD OF CONSTRUCTION (C065)		A B C D H J P R T V W Z													
		air-rotary	bored or augered	cable tool	dug	hydraulic rotary	jetted	air percussion	reverse rotary	trenching	driven	drive wash	other		
TYPE OF FINISH (C066)		C F G H O P S T W X Z	TYPE OF SEAL (C067)		B C G N Z	BOTTOM OF SEAL (C068)									
		porous concrete	gravel perf	gravel screen	horiz. gallery	open end	perf. or slotted	screen	sand point	walled	open hole	other	bentonite clay cement grout none other		
METHOD OF DEVELOPMENT (C069)		A B C J N P S Z	HOURS OF DEVELOPMENT (C070)		SPECIAL TREATMENT (C071)		C D E F H M Z								
		air-lift pump	bailed	compressed air	jetted	none	pumped	surged	other	chemicals	dry ice explosives	deflocculant hydrofracturing	mechanical other		
HOLE RECORDS															
RECORD SEQUENCE NUMBER (C724)				DEPTH TO TOP OF INTERVAL (C073)				DEPTH TO BOTTOM OF INTERVAL (C074)				PARENT SEQUENCE NUMBER (C902)		DIAMETER OF INTERVAL (C075)	
CASING RECORDS															
RECORD SEQUENCE NUMBER (C725)				DEPTH TO TOP OF CASING (C077)				DEPTH TO BOTTOM OF CASING (C078)				PARENT SEQUENCE NUMBER (C902)		DIAMETER OF CASING (C079)	CASING MATERIAL (C080)
CASING MATERIAL CODES C G P S V 4 6 Z								See Guidelines 2.3.06 for additional codes							
OPENING RECORDS															
RECORD SEQUENCE NUMBER (C726)				DEPTH TO TOP OF INTERVAL (C083)				DEPTH TO BOTTOM OF INTERVAL (C084)				PARENT SEQUENCE NUMBER (C902)			
DIAMETER OF INTERVAL (C087)				MATERIAL TYPE (C086)		TYPE OF OPENING (C085)		LENGTH OF OPENING (C089)		WIDTH OF OPENING (C088)					
RECORD SEQUENCE NUMBER (C726)				DEPTH TO TOP OF INTERVAL (C083)				DEPTH TO BOTTOM OF INTERVAL (C084)							
DIAMETER OF INTERVAL (C087)				MATERIAL TYPE (C086)		TYPE OF OPENING (C085)		LENGTH OF OPENING (C089)		WIDTH OF OPENING (C088)					
RECORD SEQUENCE NUMBER (C726)				DEPTH TO TOP OF INTERVAL (C083)				DEPTH TO BOTTOM OF INTERVAL (C084)							
DIAMETER OF INTERVAL (C087)				MATERIAL TYPE (C086)		TYPE OF OPENING (C085)		LENGTH OF OPENING (C089)		WIDTH OF OPENING (C088)					
FOOTNOTES: MATERIAL CODE OPENING C086 C G P R 4 6 S Z								See Guidelines 2.4.06 for additional codes							
TYPE CODES OPENINGS C085		F L M P R S T W X Z	See Guidelines 2.4.07 for additional codes												
		fractured rock	louvered shuttered	mesh	perf or slotted	wire-wound	screen (unknown)	sand point	walled	open hole	other				

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MEASURING POINT RECORDS

RECORD TYPE
(C766) **M P N T**

RECORD SEQUENCE NUMBER
(C728)

BEGINNING DATE
(C321)
month day year

ENDING DATE
(C322)
month day year

HEIGHT OF MEASURING POINT (C323)
month day

ALTITUDE OF MEASURING POINT (C325)

BEGINNING DATE
(C321)
month day

METHOD ALTITUDE DETERMINED
(C326)
altimeter DGPS GPS

L M N R U
level topo map DEM reported unknown

ALTITUDE ACCURACY
(C327)

ALTITUDE DATUM
(C328)

NGVD 29

National Geodetic Vertical Datum of 1929

NAVD 88

North American Vertical Datum of 1988

REMARKS (C324)

M P

RECORD SEQUENCE NUMBER
(C728)

BEGINNING DATE
(C321)
month day year

ENDING DATE
(C322)
month day year

HEIGHT OF MEASURING POINT (C323)
month day

ALTITUDE OF MEASURING POINT (C325)

METHOD ALTITUDE DETERMINED
(C326)
altimeter DGPS GPS

L M N R U
level topo map DEM reported unknown

ALTITUDE ACCURACY
(C327)

ALTITUDE DATUM
(C328)

NGVD 29

National Geodetic Vertical Datum of 1929

NAVD 88

North American Vertical Datum of 1988

REMARKS (C324)

M P

WATER-LEVEL RECORDS

L E V

MEASUREMENT DATE (C235)

month day year

TIME WATER LEVEL MEASURED
(C709)

WATER LEVEL ENTRY CODE (C243) **L**

WATER LEVEL FROM LSD (C237)

month day

STATUS (C238)

A	B	C	D	E	F	G	H	I	J	M	N	O	P	R	S	T	V	W	X	Z
atmospheric pressure	tidal stage	ice	dry	recent flowing	flowing	nearby	nearby recent flow	injection at well	injection nearby	plugged	discontinued	obstruction	pumping	recent pumping	nearby pumping	nearby recent pumping	foreign substance	destroyed	nearby sw effects	other

METHOD OF MEASUREMENT (C239)

A	B	C	E	F	G	H	L	M	N	O	R	S	T	V	Z	ACCURACY (C276)
airline	analog	calibrated airline	estimated	transducer	pressure gage	calibrated pressure gage	logs	manometer	non recording gage	observed	reported	steel tape	electric tape	calibrated electric tape	other	0 1 2 9
																1 ft 0.1 ft 0.0 ft ±1

SOURCE (C244)

A D G L M O R S Z
other govt driller geologist logs memory owner reported reporting agency other

PARTY ID (C246)

SOURCE AGENCY (C247)

REMARKS

MEASUREMENT DATE (C235)

month day year

TIME WATER LEVEL MEASURED (C709)

WATER LEVEL ENTRY CODE (C243) **L**

WATER LEVEL FROM LSD (C237)

month day

STATUS (C238)

A	B	C	D	E	F	G	H	I	J	M	N	O	P	R	S	T	V	W	X	Z
atmospheric pressure	tidal stage	ice	dry	recent flowing	flowing	nearby	nearby recent flow	injection at well	injection nearby	plugged	discontinued	obstruction	pumping	recent pumping	nearby pumping	nearby recent pumping	foreign substance	destroyed	nearby sw effects	other

METHOD OF MEASUREMENT (C239)

A	B	C	E	F	G	H	L	M	N	O	R	S	T	V	Z	ACCURACY (C276)
airline	analog	calibrated airline	estimated	transducer	pressure gage	calibrated pressure gage	logs	manometer	non recording gage	observed	reported	steel tape	electric tape	calibrated electric tape	other	0 1 2 9
																1 ft 0.1 ft 0.0 ft ±1

SOURCE (C244)

A D G L M O R S Z
other govt driller geologist logs memory owner reported reporting agency other

PARTY ID (C246)

SOURCE AGENCY (C247)

REMARKS

Miscellaneous Data Records

OTHER ID RECORDS

RECORD SEQUENCE NUMBER (C736)	RECORD TYPE (C770) O T I D	ASSIGNER (C191)
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

VISITS RECORDS

RECORD SEQUENCE NUMBER (C737)	RECORD TYPE (C774) V I S T	NAME OF PERSON (C188)
<input type="text"/>	DATE OF VISIT (C187) <input type="text"/> - <input type="text"/> - <input type="text"/> month day year <input type="text"/> - <input type="text"/> - <input type="text"/> month day year <input type="text"/> - <input type="text"/> - <input type="text"/> month day year <input type="text"/> - <input type="text"/> - <input type="text"/> month day year	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

LOG RECORDS

RECORD SEQUENCE NUMBER (C739)	RECORD TYPE (C778) L O G S	
<input type="text"/>	TYPE OF LOG (C199) DR EE DG OR	See Guidelines 4.3.03 for additional codes
<input type="text"/>	driller's electrical geologist other	BEGINNING DEPTH (C200) <input type="text"/> . <input type="text"/>
ENDING DEPTH (C201) <input type="text"/> . <input type="text"/>	SOURCE OF DATA (C202) A D G L M O R S Z	FORMAT OF DATA (C225) F M P Z
	other driller geologist logs memory owner reported reporting other agency	files machine readable published other
LOG LOCATION (C226) <input type="text"/>		
RECORD SEQUENCE NUMBER (C739)	TYPE OF LOG (C199) DR EE DG OR	See Guidelines 4.3.03 for additional codes
<input type="text"/>	driller's electrical geologist other	BEGINNING DEPTH (C200) <input type="text"/> . <input type="text"/>
ENDING DEPTH (C201) <input type="text"/> . <input type="text"/>	SOURCE OF DATA (C202) A D G L M O R S Z	FORMAT OF DATA (C225) F M P Z
	other driller geologist logs memory owner reported reporting other agency	files machine readable published other
LOG LOCATION (C226) <input type="text"/>		
RECORD SEQUENCE NUMBER (C739)	TYPE OF LOG (C199) DR EE DG OR	See Guidelines 4.3.03 for additional codes
<input type="text"/>	driller's electrical geologist other	BEGINNING DEPTH (C200) <input type="text"/> . <input type="text"/>
ENDING DEPTH (C201) <input type="text"/> . <input type="text"/>	SOURCE OF DATA (C202) A D G L M O R S Z	FORMAT OF DATA (C225) F M P Z
	other driller geologist logs memory owner reported reporting other agency	files machine readable published other
LOG LOCATION (C226) <input type="text"/>		

OTHER DATA AVAILABLE RECORDS

OTHER DATA TYPE (C181)	RECORD TYPE (C772) O T D T	RECORD SEQUENCE NUMBER (C312)
<input type="text"/>	<input type="text"/>	<input type="text"/>
OTHER DATA LOCATION (C182)	C D R Z	FORMAT (C225) F M P Z
	cooperator's office usgs office reporting agency other	files (raw data) machine readable published (reports/released) other

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OWNER RECORDS		RECORD TYPE (C768)	O W N R								
RECORD SEQUENCE NUMBER (C718)		DATE OF OWNERSHIP (C159)	<table border="1"><tr><td> </td><td> </td><td> </td></tr></table> month <table border="1"><tr><td> </td><td> </td></tr></table> day <table border="1"><tr><td> </td><td> </td><td> </td></tr></table> year								
		TYPE OF OWNER (C350)	CP GV IN OT UN WS								
			corporation government individual other unspecified water supplier								
NAME (C161)											
EXAMPLES: JONES, RALPH A. JONES CONSTRUCTION COMPANY		ACCESS TO NAME (C352)									
PHONE (C351) () e x t	<table border="1"><tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr></table> public cooper- operator USGS only district only proprietary			0	1	2	3	4			
0	1	2	3	4							
ADDRESS (1) (C353)											
ADDRESS (2) (C354)											
CITY (C355)		STATE (C356)	<table border="1"><tr><td> </td></tr></table>								
COUNTRY (C358)	ZIP CODE (C357) <table border="1"><tr><td> </td><td> </td><td> </td><td>-</td><td> </td><td> </td></tr></table>						-				
			-								
ALIAS (360)	ACCESS TO PHONE/ADDRESS (C359) <table border="1"><tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr></table> public cooper- operator USGS only district only proprietary			0	1	2	3	4			
0	1	2	3	4							
<hr/>											
RECORD SEQUENCE NUMBER (C718)		RECORD TYPE (C768)	O W N R								
DATE OF OWNERSHIP (C159)		<table border="1"><tr><td> </td><td> </td><td> </td></tr></table> month <table border="1"><tr><td> </td><td> </td></tr></table> day <table border="1"><tr><td> </td><td> </td><td> </td></tr></table> year									
		TYPE OF OWNER (C350)	CP GV IN OT UN WS								
			corporation government individual other unspecified water supplier								
NAME (C161)											
EXAMPLES: JONES, RALPH A. JONES CONSTRUCTION COMPANY		ACCESS TO NAME (C352)									
PHONE (351) () e x t	<table border="1"><tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr></table> public cooper- operator USGS only district only proprietary			0	1	2	3	4			
0	1	2	3	4							
ADDRESS (1) (C353)											
ADDRESS (2) (C354)											
CITY (C355)		STATE (C356)	<table border="1"><tr><td> </td></tr></table>								
COUNTRY (C358)	ZIP CODE (C357) <table border="1"><tr><td> </td><td> </td><td> </td><td>-</td><td> </td><td> </td></tr></table>						-				
			-								
ALIAS (360)	ACCESS TO PHONE/ADDRESS (C359) <table border="1"><tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr></table> public cooper- operator USGS only district only proprietary			0	1	2	3	4			
0	1	2	3	4							
<hr/>											
REMARKS RECORDS											
RECORD TYPE (C788)	R M K S	RECORD SEQUENCE NUMBER (C311)	<table border="1"><tr><td> </td><td> </td></tr></table>								
REMARKS (C185)		DATE OF REMARK (C184)	<table border="1"><tr><td> </td><td> </td><td> </td></tr></table> month <table border="1"><tr><td> </td><td> </td></tr></table> day <table border="1"><tr><td> </td><td> </td><td> </td></tr></table> year								
Subsequent entries may be used to continue the remark											
RECORD TYPE (C788)	R M K S	RECORD SEQUENCE NUMBER (C311)	<table border="1"><tr><td> </td><td> </td></tr></table>								
REMARKS (C185)		DATE OF REMARK (C184)	<table border="1"><tr><td> </td><td> </td><td> </td></tr></table> month <table border="1"><tr><td> </td><td> </td></tr></table> day <table border="1"><tr><td> </td><td> </td><td> </td></tr></table> year								
Subsequent entries may be used to continue the remark											
RECORD TYPE (C788)	R M K S	RECORD SEQUENCE NUMBER (C311)	<table border="1"><tr><td> </td><td> </td></tr></table>								
REMARKS (C185)		DATE OF REMARK (C184)	<table border="1"><tr><td> </td><td> </td><td> </td></tr></table> month <table border="1"><tr><td> </td><td> </td></tr></table> day <table border="1"><tr><td> </td><td> </td><td> </td></tr></table> year								
Subsequent entries may be used to continue the remark											

DISCHARGE DATA RECORDS

GEOHYDROLOGIC DATA RECORDS

AQUIFER RECORDS

RECORD TYPE (C750)	A Q F R	PARENT SEQUENCE NUMBER (C256)		RECORD SEQUENCE NUMBER (C742)	
DATE (C095)	month day year	WATER LEVEL (C126)	.	CONTRIBUTION (C132)	

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SPECIAL PAGE FOR CODING/ENTERING DISC RECORDS

DISCHARGE DATA RECORDS

D I S C

RECORD SEQUENCE NUMBER (C147)	DATE DISCHARGE MEASURED (C148)	TYPE OF DISCHARGE (C703)	DISCHARGE (gpm) (C150)
	month day year	P F	pumped flow

ACCURACY OF DISCHARGE (C310)	E G F P	SOURCE OF DISCHARGE DATA (C151)	A D G L M O R S Z
	excellent (LT 2%) good (2%-5%) fair (5%-8%) poor (GT 8%)	other govt	driller geologist logs memory owner reported reporting agency other

METHOD OF MEASUREMENT (C152)	A B C D E F M O P R T U V W X Z
	acoustic meter bailer current meter doppler meter estimated flume totaling meter orifice pitot-tube reported trajectory venturi meter volumetric measure weir unknown other

PRODUCTION LEVEL (C153) . STATIC LEVEL (C154) .

SOURCE OF LEVEL DATA (C155)	A D G L M O R S Z
	other govt driller geologist logs memory owner reported reporting agency other

METHOD OF LEVEL MEASUREMENT (C156)	A B C E F G H L M N O R S T V Z
	airline analog calibrated airline estimated transducer pressure gage calibrated press gage geophysical logs manometer non-rec gage observed reported steel tape electric tape calibrated e-tape other

PUMPING PERIOD (C157) . SPECIFIC CAPACITY (C272) . DRAWDOWN (C309) .

RECORD SEQUENCE NUMBER (C147)	DATE DISCHARGE MEASURED (C148)	TYPE OF DISCHARGE (C703)	DISCHARGE (gpm) (C150)
	month day year	P F	pumped flow

ACCURACY OF DISCHARGE (C310)	E G F P	SOURCE OF DISCHARGE DATA (C151)	A D G L M O R S Z
	excellent (LT 2%) good (2%-5%) fair (5%-8%) poor (GT 8%)	other govt	driller geologist logs memory owner other reported reporting agency other

METHOD OF MEASUREMENT (C152)	A B C D E F M O P R T U V W X Z
	acoustic meter bailer current meter doppler meter estimated flume totaling meter orifice pitot-tube reported trajectory venturi meter volumetric measure weir unknown other

PRODUCTION LEVEL (C153) . STATIC LEVEL (C154) .

SOURCE OF LEVEL DATA (C155)	A D G L M O R S Z
	other govt driller geologist logs memory owner other reported reporting agency other

METHOD OF LEVEL MEASUREMENT (C156)	A B C E F G H L M N O R S T V Z
	airline analog calibrated airline estimated transducer pressure gage calibrated press gage geophysical logs manometer non-rec gage observed reported steel tape electric tape calibrated e-tape other

PUMPING PERIOD (C157) . SPECIFIC CAPACITY (C272) . DRAWDOWN (C309) .

RECORD SEQUENCE NUMBER (C147)	DATE DISCHARGE MEASURED (C148)	TYPE OF DISCHARGE (C703)	DISCHARGE (gpm) (C150)
	month day year	P F	pumped flow

ACCURACY OF DISCHARGE (C310)	E G F P	SOURCE OF DISCHARGE DATA (C151)	A D G L M O R S Z
	excellent (LT 2%) good (2%-5%) fair (5%-8%) poor (GT 8%)	other govt	driller geologist logs memory owner other reported reporting agency other

METHOD OF MEASUREMENT (C152)	A B C D E F M O P R T U V W X Z
	acoustic meter bailer current meter doppler meter estimated flume totaling meter orifice pilot-tube reported trajectory venturi meter volumetric measure weir unknown other

PRODUCTION LEVEL (C153) . STATIC LEVEL (C154) .

SOURCE OF LEVEL DATA (C155)	A D G L M O R S Z
	other govt driller geologist logs memory owner other reported reporting agency other

METHOD OF LEVEL MEASUREMENT (C156)	A B C E F G H L M N O R S T V Z
	airline analog calibrated airline estimated transducer pressure gage calibrated press gage geophysical logs manometer non-rec gage observed reported steel tape electric tape calibrated e-tape other

PUMPING PERIOD (C157) . SPECIFIC CAPACITY (C272) . DRAWDOWN (C309) .
6.1

SPECIAL PAGE FOR CODING/ENTERING GEOH RECORDS

GEOHYDROLOGIC DATA

RECORD TYPE (C748)	G E O H	RECORD SEQUENCE NUMBER (C721)	[] []	DEPTH TO TOP OF UNIT (C091)	[] [] [] . []	DEPTH TO BOTTOM OF UNIT (C092)	[] [] [] . []	
UNIT IDENTIFIER (C093)	[] [] [] [] [] []		LITHOLOGY (C096)	[] []	CONTRIBUTING UNIT (C304)	P S N Q U		
LITHOLOGIC MODIFIER (C97) [] [] [] [] [] [] []								
[] [] [] [] [] [] []								
[] [] [] [] [] [] []								
UNIT IDENTIFIER (C093)	[] [] [] [] [] []		RECORD SEQUENCE NUMBER (C721)	[] []	DEPTH TO TOP OF UNIT (C091)	[] [] [] . []	DEPTH TO BOTTOM OF UNIT (C092)	[] [] [] . []
LITHOLOGY (C096)	[] [] [] []		CONTRIBUTING UNIT (C304)	P S N Q U				
principal aquifer	secondary aquifer	contributes no water	aggregate of units	unknown				
LITHOLOGIC MODIFIER (C097) [] [] [] [] [] [] []								
[] [] [] [] [] [] []								
[] [] [] [] [] [] []								
UNIT IDENTIFIER (C093)	[] [] [] [] [] []		RECORD SEQUENCE NUMBER (C721)	[] []	DEPTH TO TOP OF UNIT (C091)	[] [] [] . []	DEPTH TO BOTTOM OF UNIT (C092)	[] [] [] . []
LITHOLOGY (C096)	[] [] [] []		CONTRIBUTING UNIT (C304)	P S N Q U				
principal aquifer	secondary aquifer	contributes no water	aggregate of units	unknown				
LITHOLOGIC MODIFIER (C097) [] [] [] [] [] [] []								
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UNIT IDENTIFIER (C093)	[] [] [] [] [] []		RECORD SEQUENCE NUMBER (C721)	[] []	DEPTH TO TOP OF UNIT (C091)	[] [] [] . []	DEPTH TO BOTTOM OF UNIT (C092)	[] [] [] . []
LITHOLOGY (C096)	[] [] [] []		CONTRIBUTING UNIT (C304)	P S N Q U				
principal aquifer	secondary aquifer	contributes no water	aggregate of units	unknown				
LITHOLOGIC MODIFIER (C97) [] [] [] [] [] [] []								
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Appendix 2. Minimum Data Set for the Washington Water Science Center

The following data elements are required and expected to be entered for ground-water sites in the Washington Water Science Center's Ground-Water Site Inventory Database.

Note: Data Elements required by GWSI are identified on the Washington Water Science Center's coding form by a solid double-line, box. Additional Data Elements required by the Washington Water Science Center are identified on coding form by a dashed line outlining the box.

		Required by Ground-Water Site Inventory	Expected by Washington Water Science Center
Section 1—SITE Record			
C004	Agency Code	X	X
C001	Site Identification Number	X	X
C005	Project Number		X
C012	Station Name/Local Number	X	X
C802	Station Type	X	X
C006	District	X	X
C041	Country	X	X
C007	State	X	X
C008	County	X	X
C009	Latitude	X	
C010	Longitude	X	X
C011	Latitude/Longitude Accuracy	X	X
C035	Latitude/Longitude Method	X	X
C036	Latitude/Longitude Datum	X	X
C016	Altitude		X
C018	Altitude Accuracy		X
C017	Altitude Method		X
C022	Altitude Datum		X
C020	Hydrologic-Unit Code		X
C801	Drainage-Basin Code		X
C813	Standard Time Zone Code	X	X
C814	Daylight Savings Time Flag	X	X
C711	Date Inventoried (if site was visited)		X
C002	Site Type	X	X
C032	Web-ready Flag	X	X
C803	Agency Use of Site		X
C003	Data Reliability	X	X
C021	Date of Construction		X
C023	Use of Site	X	X
C024	Use of Water (ground water sites only)	X	
C027	Hole Depth		X
C028	Well Depth		X
C029	Source of Depth Data		X

		Required by Ground-Water Site Inventory	Expected by Washington Water Science Center
Section 2—Measuring-Point Records (MPNT) (Expected for all wells with water levels)			
C728	Record Sequence Numbers		X
C321	Beginning Date		X
C323	Height of Measuring Point		X
C325	Altitude of Measuring Point		X
C326	Altitude Method		X
C327	Altitude Accuracy		X
C328	Altitude Datum		X
C324	Remarks		X
Section 3—Water-Level Records (LEV) (Expected for all wells)			
C235	Measurement Date		X
C709	Time Water Level Measured		X
C243	Water-Level Entry Code		X
C237	Water Level from LSD		X
C238	Status		X
C239	Method of Measurement		X
C276	Accuracy		X
C244	Source		X
C246	Party ID		X
C247	Source Agency		X
C858	Web-ready Flag		X
Section 4—Miscellaneous Data Records—Owner's Records (OWNR)			
C718	Record Sequence Number		X
C159	Date of Ownership		X
C350	Type of Owner		X
C161	Name		X
C352	Access to Name		X
Section 4—Miscellaneous Data Records—Other Identifiers Records (OTID)			
Minimum required OTID entry is the current and previous Project Numbers (C005) and the Washington Department of Ecology Unique Well ID Number if one has been assigned)			
Section 4—Miscellaneous Data Records—Site Visit Records (VIST) (if site has been inventoried)			

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Appendix 3. Geohydrologic Unit Identifiers for Washington State

Geologic Time	Unit Identifier	Geohydrologic Unit
UNKNOWN	000FILL	UNCLASSIFIED FILL
	000HKNS	HAWKINS FORMATION
	000LCHR	LEECHER METAMORPHICS
	000MNSR	MOUNT STUART GRANODIORITE
	000MTHW	METHOW GNEISS
	000NWKM	NEWAUKUM SERIES
	000ORCS	ORCAS GROUP
	000OVBD	UNCLASSIFIED OVERBURDEN
	000PSSN	PESHASTIN FORMATION
	000SPCK	SHEEP CREEK CONGLOMERATE
	000TLBK	TURTLEBACK COMPLEX
	BEDROCK	BEDROCK (used by WAWSC for basalt, etc.)
	BASEMENT	BASEMENT (used by WAWSC for granite, etc.)
CENOZOIC	100GVWWO	GRAVEL OF WALLA WALLA, OLDER
	100PRPH	PLIO-PLEISTOCENE, POST-RINGOLD-PRE-HANFORD FORMATIONS
QUATERNARY	110ALVM	QUATERNARY ALLUVIUM
	110BSLT	BASALT
	110CLVM	COLLUVIAL
	110DGHD	DOGS HEAD ANDESITES
	110DRML	DRUMHELLER SILTS
	110DUNE	DUNE SAND
	110GCPK	GLACIER PEAK VOLCANICS
	110GRCK	GOAT ROCK PYROCLASTIC DEPOSITS
	110LOSS	UNCLASSIFIED LOESS
	110MBKR	MOUNT BAKER LAVA
HOLOCENE	110MNRR	MOUNT RAINIER LAVAS
	110MSHS	MOUNT ST HELENS LAVAS
	111ALVM	HOLOCENE ALLUVIUM
	111CLWD	COLWOOD FORMATION
	111DUNE	DUNE SAND
PLEISTOCENE	111ELCR	ELECTRON MUDFLOW
	111OSCL	OSCEOLA MUDFLOW
	112ADML	ADMIRALTY DRIFT OR CLAY
	112ALVM	ALLUVIUM
	112ARLG	ARLINGTON GRAVEL MEMBER OF VASHON DRIFT

Geologic Time	Unit Identifier	Geohydrologic Unit
PLEISTOCENE—Cont.	112MRVL	MARYSVILLE SAND MEMBER OF VASHON DRIFT
	112NPLM	NESPELEM SILT
	112OKNG	OKANOGAN TILL
	112ORNG	ORTING DRIFT OR GLACIATION
	112PSCO	PASCO GRAVELS
	112PCCK	PILCHUCK CLAY MEMBER OF VASHON DRIFT
	112PLLP	PUYALLUP FORMATION OR INTERGLACIATION
	112PLUS	PALOUSE FORMATION
	112QUTS	QUEETS BEDS
	112RGLD	RINGOLD FORMATION
	112SCBD	SCABLAND FLOOD DEPOSITS
	112SKKM	SKOKOMISH GRAVEL
	112SLCM	STEILACOOM GRAVEL
	112SLGM	STILLAGUAMISH SAND MEMBER OF VASHON DRIFT
	112SSPG	SALMON SPRINGS DRIFT
	112STCK	STUCK DRIFT
	112STSP	SATSOP FORMATION
	112SUMS	SUMAS DRIFT OF FRASER GLACIATION
	112TCHT	TOUCHET BEDS
	112TFLS	TIFLIS MEMBER OF WAHLUKE FORMATION
	112THLH	TAHOLAH FORMATION
	112TILL	TILL
	112TRHL	TROUT HILL LAVA FLOWS
	112TRRC	TERRACE DEPOSITS
	112TTON	TIETON ANDESITE
	112VSHN	VASHON DRIFT OF FRASER GLACIATION
	112WGHL	WINGATE HILL DRIFT
	112WHLK	WAHLUKE FORMATION
	112WLLP	WILLAPA CLAYS
TERTIARY	120CAMS	CAMAS BASALT
	120CDRL	CATHEDRAL GRANITE
	120CLDP	CLOUDY PASS DIORITE
	120KRGR	KRUGER ALKALINE SYENITES
	120PLMR	PALMER VOLCANICS
	120PLLK	PHALEN LAKE VOLCANICS
	120RSLD	ROSSLAND GROUP
	120SDCK	SOLEDUCK FORMATION
	120SPRD	SHEPPARD GRANITE
	120TIGR	TIGER FORMATION
	120TSSR	TWIN SISTERS DUNITE
	120UDRD	UNDERWOOD LAVA
PLIOCENE	121BVRL	BEVERLY MEMBER OF ELLENSBURG FORMATION
	121ELPM	ELEPHANT MOUNTAIN FLOW
	121HARO	HARO FORMATION
	121HOKO	HOKO FORMATION
	121HWSN	HOWSON ANDESITE
	121MNSN	MONTESANO FORMATION
	121QLLT	QUILLAYUTE FORMATION
	121QNLT	QUINAULT FORMATION
	121RFRV	RAFT RIVER FORMATION
	121RGLD	UNDIFFERENTIATED RINGOLD FORMATION
	121RGLDB	BASAL PART OF RINGOLD FORMATION
	121RGLDL	LOWER PART OF RINGOLD FORMATION

Geologic Time	Unit Identifier	Geohydrologic Unit
PLIOCENE—Cont.	121RGGLDM	MIDDLE PART OF RINGOLD FORMATION
	121RGGLDU	UPPER PART OF RINGOLD FORMATION
	121SELH	SELAH TUFF MEMBER OF ELLensburg FORMATION
	121SGLF	SUGARLOAF ANDESITE
	121SLBT	SELAH BUTTE FLOW
	121SMMT	SUMMIT CONGLOMERATE
	121SNPS	SNIPES CONGLOMERATES
	121SQLM	SNOQUALMIE GRANODIORITE
	121TRDL	TROUTDALE FORMATION
	121UDDM	UNDERWOOD MOUNTAIN LAVA
MIOCENE	122BRNP	BROWNS POINT FORMATION
	122CBRV	COLUMBIA RIVER BASALT GROUP
	122CLLM	CLALLAM FORMATION
	122DGLC	DOUGLAS CANYON FORMATION
	122EGCK	EAGLE CREEK FORMATION
	122ELBG	ELLENSBURG FORMATION
	122EMCL	ENUMCLAW VOLCANIC SERIES
	122FFPK	FIFES PEAK FORMATION
	122FSPG	FRENCHMAN SPRINGS MEMBER OF YAKIMA BASALT OF COLUMBIA RIVER BASALT GROUP
	122GDRD	GRAND RONDE BSLT OF YAKIMA BSLT SUBGROUP OF COLUMBIA RIVER BASALT GROUP
	122HMBF	HAMMER BLUFF FORMATION
	122HOH	HOH FORMATION
	122HWRD	HOWARD ARKOSE
	122IMNH	IMNAHA BASALT OF COLUMBIA RIVER BASALT GROUP
	122LATH	LATAH FORMATION
	122LCCK	LINCOLN CREEK FORMATION
	122LKVG	LAKE VANTAGE LAVAS
	122MBTN	MABTON MEMBER (INFORMAL USAGE) OF ELLENSBURG FORMATION
	122MSHL	MASHEL FORMATION
	122OCDP	ORCHARD POINT CONGLOMERATE OF BLAKELEY FORMATION
	122PCGG	PICTURE GORGE BASALT OF COLUMBIA RIVER GROUP
	122PDOV	PEND OREILLE VALLEY ANDESITE BASALT GROUP
	122PRPD	PRIEST RAPIDS MEMBER OF YAKIMA BASALT OF COLUMBIA RIVER
	122QNCY	QUINCY DIATOMITE BED OF PRIEST RAPIDS MEMBER OF YAKIMA BASALT
	122ROZA	ROZA MEMBER OF YAKIMA BASALT OF COLUMBIA RIVER GROUP
	122RSRP	RESTORATION POINT MEMBER OF BLAKELEY FORMATION
	122SDLM	SADDLE MNT BASALT OF YAKIMA, SUBGROUP OF COLUMBIA RIVER BASALT GROUP
	122SELH	SELAH MEMBER (INFORMAL USAGE) OF ELLensburg FORMATION
	122SKMN	SKAMANIA VOLCANIC SERIES
	122SLVS	SILVER STAR GRANODIORITE
	122SQCK	SQUAW CREEK DIATOMITE BED OF FRENCHMAN SPRINGS MEMBER OF YAKIMA BASALT
	122SVRG	STEVE'S RIDGE FORMATION
	122TNUM	TANEUM ANDESITE
	122VNTG	VANTAGE MEMBER OF ELLensburg FORMATION
	122WIDX	WEST INDEX ANDESITIC SERIES
	122WNPM	WANAPUM BASALT OF YAKIMA BASALT SUBGROUP OF COLUMBIA RIVER BASALT GROUP
	122YKIM	YAKIMA BASALT SUBGROUP OF COLUMBIA RIVER BASALT GROUP

Geologic Time	Unit Identifier	Geohydrologic Unit
OLIGOCENE	123BLKL	BLAKELEY FORMATION
	123GROM	GEROME VOLCANICS
	123GRRC	GRIES RANCH FORMATION
	123KDKM	KLONDIKE MOUNTAIN FORMATION
	123LNCL	LINCOLN FORMATION
	123MRSN	MARROWSTONE SHALE
	123OPCS	OHANAPECOSH FORMATION
	123PRTR	PORTER SHALE
	123PUGT	PUGET GROUP
	123QMPR	QUIMPER SANDSTONE
	123RNTN	RENTON FORMATION OF PUGET GROUP
	123RSRP	RESTORATION POINT HORIZON
	123SKCK	SKATE CREEK LAHARIC BRECCIA
	123STTL	SEATTLE FORMATION
	123TKWL	TUKWILA FORMATION OF PUGET GROUP
	123TMTB	TOM THUMB TUFF MEMBER OF KLONDIKE MOUNTAIN FORMATION
	123TNSD	TOWNSEND SHALE
	123TRVR	TWIN RIVER FORMATION
	123TUTL	TOUTLE FORMATION
	123WKKM	WAHKIAKUM FORMATION
EOCENE	124BLGM	BELLINGHAM BEDS
	124BNDR	BOUNDARY SHALE
	124BYNE	BAYNE SERIES
	124CBRV	CARBON RIVER COAL SERIES
	124CCKN	CHUCKANUT FORMATION
	124CHLS	CHEHALIS SANDSTONE
	124CLTZ	COWLITZ FORMATION
	124CRBD	CARBONADO FORMATION OF PUGET GROUP
	124CRSC	CRESCENT FORMATION
	124EVCK	EVANS CREEK COAL SERIES
	124FRFX	FAIRFAX COAL BEARING ROCKS
	124FRKL	FRANKLIN SANDSTONE
	124FRKLS	FRANKLIN SERIES
	124GUYE	GUYE FORMATION
	124KBHL	KNOB HILL ANDESTIE
	124KCSS	KACHESS RHYOLITE
	124KMMR	KUMMER SERIES
	124KMMRF	KUMMER FORMATION
	124LYRE	LYRE FORMATION
	124MCIS	MCINTOSH FORMATION
	124MCSN	METCHOSIN VOLCANIC SERIES
	124MLMN	MELMONT COAL BEARING ROCKS
	124MNSS	MANASTASH FORMATION
	124NCHS	NACHES FORMATION
	124NRCF	NORTHCRAFT FORMATION OF PUGET GROUP
	124NTPC	NATAPOC FORMATION
	124OBCK	OBRIEN CREEK FORMATION
	124OLQU	OLEQUA FORMATION
	124OQCK	OLEQUA CREEK MEMBER OF COWLITZ FORMATION
	124PELL	PE ELL VOLCANICS MEMBER OF COWLITZ FORMATION
	124PPNC	PIPESTONE CANYON FORMATION
	124PUYR	PUYER FORMATION
	124RGRV	RAGING RIVER FORMATION

Geologic Time	Unit Identifier	Geohydrologic Unit
EOCENE—Cont.	124RSLN	ROSLYN FORMATION
	124SCCK	SCATTER CREEK RHYODACITE OR FORMATION
	124SKKK	SKOOKUMCHUCK FORMATION
	124SLCK	STILLWATER CREEK MEMBER OF COWLITZ FORMATION
	124SNPL	SANPOIL VOLCANICS
	124SPKN	SPIKETON FORMATION OF PUGET GROUP
	124SPRR	SOUTH PRAIRIE FORMATION
	124SUMS	SUMAS SHALE IN CHUCKANUT FORMATION
	124SWUK	SWAUK FORMATION
	124TGRM	TIGER MOUNTAIN FORMATION OF PUGET GROUP
	124TNWY	TENAWAY BASALT
	124WLKS	WILKESON COAL SERIES
PALEOCENE	125EGLE	EAGLE GREENSCHIST
	125ESTN	EASTON SCHIST
MESOZOIC	200JUMB	JUMBO VOLCANICS
	200KRGM	KRUGER MOUNTAIN MALIGNITE
	200OSYS	OSOYOOS GRANODIORITE
	200WSKM	WHISKEY MOUNTIAN GRANDODIORITE
CRETACEOUS	210BGCL	BOGACHIEL FORMATION
	210CLEM	CLE ELUM FORMATION
	210LCRV	LEECH RIVER GROUP
	210LNLK	LOON LAKE GRANITE
	210VGRG	VIRGINIAN RIDGE FORMATION
UPPER CRETACEOUS	211MGPK	MIDNIGHT PEAK FORMATION
	211WNRP	WINTHROP SANDSTONE
LOWER CRETACEOUS	217PSTN	PASAYTEN FORMATION
	217SPDN	SPIEDEN FORMATION
JURASSIC	220EGCF	EAGLE CLIFF PORPHYRITE
	220INDX	INDEX GRANDODIORITE
	220NWBY	NEWBY FORMATION
	220RMML	REMMEL GRANDODIORITE
	220TYE	TYE GRANITE
UPPER JURASSIC	221CHLN	CHELAN GRANODIORITE
	221MTOR	METEOR GRANDODIORITE
	221SKSN	SHUKSAN FORMATION
TRIASSIC	230COVD	COVADA GROUP
	230FDLG	FIDALGO FORMATION
	230VNTR	VENTURA FORMATION
PALEOZOIC	300CLGS	CLUGSTON LIMESTONE
	300DRLK	DEER LAKE ARGILLITE
	300EGLM	EAGLE MOUNTIAN QUARTZITE
	300FCRK	FISH CREEK ARGILLITE
	300LDPN	LEAD POINT ARGILLITE
	300SNJN	SAN JUAN SERIES
PERMIAN	310GRFL	GRANITE FALLS LIMESTONE
PENNSYLVANIAN	320CHPKB	CHOPAKA BASIC INTRUSIVES
	320CHPKS	CHOPAKA SCHIST
	320GNPK	GUNN PEAK FORMATION
	320HZMN	HOZOMEEN SERIES
	320KRGR	KRUGER SCHIST

Geologic Time	Unit Identifier	Geohydrologic Unit
MISSISSIPPIAN	330CLVL	COLVILLE QUARTZITE
UPPER MISSISSIPPIAN	331CHLH	CHEWELAH ARGILLITE
SILURIAN	350SVNS	STEVENS SERIES
ORDOVICIAN	360LDBR	LEDBETTER SLATE
	360MLNY	MALONEY METAMORPHIC SERIES
CAMBRIAN	370BCKK	BUCKSKIN SCHIST
	370BNDR	BOUNDARY ARGILLITE
	370CDCK	CEDAR CREEK ARGILLITE
	370CHKM	CHIWAUKUM SCHIST
	370DPLK	DEEP LAKE ARGILLITE
	370FRNW	FERNOW GNEISS
	370GYPS	GYPSY QUARTZITE
	370REVS	REEVES LIMESTONE MEMBER OF MAITLEN PHYLLITE
	370SWKN	SWAKANE BIOTITE GNEISS
	370TONG	TONGA FORMATION
MIDDLE CAMBRIAN	374MSSN	MISSION ARGILLITE
	374MTLN	METALINE LIMESTONE OR FORMATION
	374NRPR	NORTHORT LIMESTONE
	374RBCK	REPUBLICAN CREEK LIMESTONE
	374RDTP	RED TOP LIMESTONE
LOWER CAMBRIAN	377ADDY	ADDY QUARTZITE
	377MTLN	MAITLEN PHYLLITE
	377ODDM	OLD DOMINION LIMESTONE
PRECAMBRIAN	400BDLK	BEAD LAKE FORMATION
	400BFHP	BUFFALO HUMP FORMATION OF DEER TRAIL GROUP
	400DRTL	DEER TRAIL GROUP
	400EDNA	EDNA DOLOMITE OF DEER TRAIL GROUP
	400HCKB	HUCKLEBERRY FORMATION
	400LEOL	LEOLA VOLCANICS
	400MCHL	MC HALE SLATE OF DEER TRAIL GROUP
	400MNHL	MOON HILL QUARTZITE MEMBER OF SKOOKUM FORMATION
	400MRDG	MARTIN RIDGE SCHIST
	400MRSL	MARSHALL DIORITE
	400NONM	NO NAME ARGILLITE
	400NPRT	NEWPORT GROUP
	400ORNT	ORIENT GNEISS
	400RBBN	RIBBON GNEISS
	400SDRF	SHEDROOF CONGLOMERATE
	400SKKM	SKOOKUM FORMATION
	400SSGR	STENSGAR DOLOMITE OF DEER TRAIL GROUP
	400TOGO	TOGO FORMATION OF DEER TRAIL GROUP

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Appendix 4. Lithology Codes for Washington

Code	Rock Term	Code	Rock Term
ALVM	Alluvium	LGNT	Lignite
ANDR	Anhydrite	LMSN	Limestone
ANRS	Anorthosite	LMDM	Limestone and dolomite
ARKS	Arkose	LMSH	Limestone and shale
BSLT	Basalt	LOAM	Loam
BNTN	Bentonite	LOSS	Loess
BLDR	Boulders	MRBL	Marble
BLSD	Boulders and sandMARL	MARL	Marl
BLSC	Boulders, silt, and clay	MRLS	Marlstone
BRCC	Breccia	MMPC	Metamorphic (undifferentiated)
CLCT	Calcite	MUCK	Muck
CLCH	Caliche (hard pan)	MUD	Mud
CHLK	Chalk	MDSN	Mudstone
CHRT	Chert	OTHR	Other
CLAY	Clay	OTSH	Outwash
CLSD	Clay, some sand	OBDN	Overburden
CLSN	Claystone	PEAT	Peat
COAL	Coal	QRTZ	Quartzite
COBB	Cobbles	RSDM	Residuum
COSD	Cobbles and sand	RYLT	Rhyolite
COSC	Cobbles, silt, and clay	ROCK	Rock
CLVM	Colluvium	RBBL	Rubble
CGLM	Conglomerate	SAND	Sand
CQUN	Coquina	SDCL	Sand and clay
DIBS	Diabase	SDGL	Sand and gravel
DORT	Diorite	SDST	Sand and silt
DLMT	Dolomite	SGVC	Sand, gravel, and clay
DMSH	Dolomite and shale	SNCL	Sand, some clay
DRFT	Drift	SNDS	Sandstone
EVPR	Evaporite	SDSL	Sandstone and shale
GBBR	Gabbro	SPRL	Saprolite
GLCL	Glacial (undifferentiated)	SCST	Schist
GNSS	Gneiss	SDMN	Sedimentary (undifferentiated)
GRNT	Granite	SRPN	Serpentine
GRGN	Granite, gneiss	SHLE	Shale
GRVL	Gravel	SILT	Silt
GRCL	Gravel and clay	STCL	Silt and clay
GRCM	Gravel, cemented	SLSH	Siltstone and shale
GRDS	Gravel, sand, and silt	SLSN	Siltstone
GRSC	Gravel, silt and clay	SLTE	Slate
GRCK	Graywacke	SOIL	Soil
GNST	Greenstone	SYNT	Syenite
GPSM	Gypsum	TILL	Till
HRDP	Hard pan	TRVR	Travertine
IGNS	Igneous (undifferentiated)	TUFF	Tuff
		VLCC	Volcanic (undifferentiated)

Appendix 5. Other Records and Components

The following GWSI records and components generally are not coded and entered by the Washington Water Science Center and do not appear on the WAWSC coding form ([appendix 1](#)). They are included here, should they be needed.

Subsection	Component Name	Component Number
Section 1 Site Record		
1.28	National Water-Use Code	C039
1.29	Data Type	C804
1.30	Instruments	C805
Section 2 Construction Data Records		
2.6	Lift Record (LIFT)	C752
2.7	Repair Records (REPR)	C762
2.8	Spring Record (SPNG)	C764
Section 3 Water-Level Data Records		
3.2	Water-levels from Measuring Point (MP)	-
3.3	Water-levels from Mean Sea Level (MSL)	-
Section 4 Miscellaneous Data Records		
4.7	Owner Contact Records (OCNT)	C797
4.8	Network Records (NETW)	C780
4.9	Special-Cases Records (SPEC)	C782
4.10	Miscellaneous Values Records (MSVL)	C784
4.11	Cooperator's Data Records (COOP)	C786
Section 7 Observation Well Heading Records		
Section 8 Hydraulic Data Records		
8.1	Hydraulic Unit Records (HYDR)	C744
8.2	Coefficients Records (COEF)	C746

Section 1– Site Record

The Site Record stores locational and general information about a site. The following Site Record Components generally are not coded and entered by the WAWSC, but are included here should they be needed.

Subsection	Component Name	Component Number
1.28	National Water-Use Code	C039
1.29	Data Type	C804
1.30	Instruments	C805

1.28 National Water-Use Code (C039—two-character code): Enter the code that best describes the use of water from the site.

Code	Water Use
WS	Water supply refers to water withdrawn by public and private water suppliers and delivered to various users. Water suppliers are public or private water systems that provide water to at least 25 people or a minimum of 15 connections, or irrigation suppliers such as irrigation companies or irrigation districts. WAWSC Standard and Practice is to limit this category to public water supplies, and to include irrigation suppliers under the irrigation category.
DO	Domestic or Residential refers to water for household purposes, such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens.
CO	Commercial refers to water used by facilities that provide goods and services such as hotels, restaurants, office buildings, educational institutions, prisons, government and military facilities, and retail sales stores. For military bases and prisons, if domestic use cannot be determined, all withdrawals should go in the commercial category.
IN	Industrial refers to water used for such purposes as processing, washing, and cooling in facilities that manufacture or fabricate products. Electric power generation, mining, and the extraction of crude petroleum and gases are included in other water use categories.

Code	Water Use
IR	Irrigation refers to artificial application of water on lands to assist in the growing of crops and pastures or to maintain vegetative growth in recreational lands such as parks and golf courses. WAWSC Standard and Practice is to include irrigation suppliers under this category while reserving the water supply category for public water suppliers.
MI	Mining refers to water used for extracting minerals occurring naturally, including solids such as coal and ores, liquids such as crude oil, and gases such as natural gas. Mining also includes uses associated with quarrying, well operations, milling, and other preparations customarily done at the mine site or as part of a mining activity. Mining does not include uses in processing, such as smelting, refining petroleum, or slurry pipeline operations.
LV	Livestock refers to water used for livestock watering, feed lots, dairy operations, and other on-farm stock water needs. Livestock includes all animals other than fish.
PH	Hydroelectric power generation refers to the use of water to generate electricity at plants where the turbine generators are driven by falling water.
ST	Wastewater treatment refers to the amount of water treated and released by facilities engaged primarily in the collection, treatment, and disposal of wastewater conveyed through a sewer system.
RM	Remediation refers to water that is either (a) pumped from a contaminated area to control the flow direction of contaminants in groundwater or (b) pumped, treated, and either used or returned to ground-water or surface-water.
TE	Thermoelectric power generation refers to water used in the process of generating electrical power using fossil fuel, nuclear, or geothermal fuel sources. TE replaces the codes PF for fossil fuel, PN for nuclear, and PG for geothermal power generation.
AQ	Aquaculture refers to water used in growing or rearing of plants or animals in water; in a confined space; and under controlled feeding, sanitation, and harvesting procedures. Includes water used by fish hatcheries and by fish farms.

1.29 Data Type (C804—30-position array): The codes in this array act as flags to identify the types of data collected at a site. Code in the proper location or locations in the array, one of the following codes:

Code	Data collection activity
A	Active data collection site
I	Inactive or discontinued data collection site
O	Inventory data site only

Column In Array	Column on Screen	Type of data collected
1	1	Stage or water levels (continuous)
2	2	Stage or water levels (intermittent)
3	3	Water quality (continuous)
4	4	Water quality (intermittent)
5	5	Precipitation (continuous)
6	6	Precipitation (intermittent)
7	7	Evaporation (continuous)
8	8	Evaporation (intermittent)
9	9	Wind velocity
10	10	Tide (continuous)
11	A	Tide (intermittent)
12	B	Sediment concentration
13	C	Sediment particle size
14	D	Peak flows
15	E	Low flows
16	F	Water Use
17-30	—	Unassigned

1.30 Instruments (C805—30-position array): The codes in this array act as flags to identify the types of instruments at a site. Enter a “Y” for “YES” or leave blank for “NO” instrument at site; multiple instruments can be identified for a site. Code a “Y” in the proper location (locations) for each instrument at the site.

Column In Array	Column on Screen	Type of instrumentation at site
1	1	Digital recorder
2	2	Graphic recorder
3	3	Telemetry—land line
4	4	Telemetry—radio
5	5	Telemetry—satellite relay
6	6	AHDAS data logger
7	7	Crest-stage gage
8	8	Tide gage
9	9	Deflection meter
10	10	Bubble gage
11	A	Stilling well
12	B	Continuous Record (CR) data recorder
13	C	Weighing rain gage
14	D	Tipping-bucket rain gage
15	E	Acoustic velocity meter
16	F	Electromagnetic flow meter
17	G	Pressure transducer
18–30	–	Unassigned

Section 2—Construction Data Records

Construction Data Records consist of eight record types that store data related to the physical characteristics of a ground-water site. Each record type may contain one or more individual data records. The Primary Key for all Construction Data Records combines Agency Code (C004), Site ID (C001), Record Type Code, and Record Sequence Number.

Subsection	Component Name	Component Number
2.0.01	Agency Code	C004
2.0.02	Site ID	C001
2.0.03	Record Type	–

2.01 Agency Code (C004—Mandatory—Part of Primary Key—five-character code): This field is populated by the GWSI software with the Agency Code (C004) from the Site Record.

2.02 Site ID (C001—Mandatory—Part of Primary Key—15-digit integer): This field is populated by the GWSI software with the Site Identification Number (C001) from the Site Record.

2.03 Record Type (Mandatory—four-character code): Record Type codes identify the type of data included in each of the Construction Data Records.

Code	Type of Record	Component Number
LIFT	Lift and Pump data	C752
REPR	Minor Repair data	C762
SPNG	Spring data	C764

WAWSC Standard and Practice is to code and enter data only for Record Types CONS, HOLE, CSNG, OPEN, and MPNT which appear on the WAWSC coding form. LIFT, REPR and SPNG records do not appear on the WAWSC coding form but are included here should they be needed.

2.6 Lift Records (LIFT) (C752—Mandatory—Part of Primary Key—four-character code): LIFT Records store information about the lift, major pump, and standby pump at a site. Entry of a LIFT record does not require prior entry of a CONS Record.

Subsection	Component Name	Component Number
2.6.01	Record Sequence Number	C254
2.6.02	Type of Lift	C043
2.6.03	Date Installed/Recorded	C038
2.6.04	Intake Depth	C044
2.6.05	Type of Power	C045
2.6.06	Horsepower Rating	C046
2.6.07	Manufacturer	C048
2.6.08	Serial Number	C049
2.6.09	Power Company	C050
2.6.10	Power Company Account Number	C051
2.6.11	Power Meter Number	C052
2.6.12	Pump Rating	C053
2.6.13	Additional Lift	C255
2.6.14	Company Maintaining Lift	C054
2.6.15	Rated Capacity	C268
2.6.16	Standby Power	C056
2.6.17	Horsepower of Standby Power Source	C057
2.6.18	Web-ready Flag	C854

2.6.01 Record Sequence Number (C254—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each LIFT Record being coded and entered.

2.6.02 Type of Lift (C043—Mandatory—one-character code): Enter the code that best describes the type of pump or lift.

Code	Type of Lift
A	Air lift is a type of lift in which a jet of air pumped below the water table causes a stream of mixed air and water to issue from the well.
B	Bucket includes the familiar “rope and bucket,” chain and bucket lifts, and the small bailer lifted by a rope or chain and pulley.
C	Centrifugal pumps have rotating impellers in a closed chamber that draw the water into the pump. The water is discharged from the pump, commonly under great pressure, by centrifugal force.
J	Jet pumps have two pipes extending from the pump into the well. One pipe forces water down the hole under pressure while the other pipe discharges water that has been forced to the surface by the action of the jet. Jet pumps are used principally for small water supplies, such as would be used for a suburban home, farm, or small commercial establishment.
P	Piston pumps include the familiar lift and pitcher pumps common in many rural areas. The old “reciprocating” pumps and the “deep-well with walking-beam jacks” are of the piston type.
R	Rotary pumps operate on the principle that direct pressure is created by squeezing the water between specially designed runners. A relatively high vacuum may be created on the intake side so the suction lift is comparable to that for centrifugal pumps.
S	Submersible pumps are a special type of turbine pump in which an electric motor is connected directly to the impellers and submerged beneath the water. It can be recognized by the presence of insulated electric wire leading into the well and the absence of a pump or power unit at the surface.
T	Turbines are of several types and may be for a deep or shallow well. A series of impellers, placed below the surface of the water, are rotated by a vertical shaft connected to a power source at the land surface. These impellers “pick up” the water and force it to the surface through the pump column. Such pumps commonly are used to lift large amounts of water at high pressure. Turbines are used in high-capacity wells for public, industrial, or irrigation supply.
U	Unknown: use only if the site is equipped with a pump about which other data are available, but the type of pump cannot be identified.
Z	Other includes any lifting device that does not belong in one of the categories listed above. Some examples are: helical rotor, hydraulic ram, and siphon (explain in Miscellaneous Remarks).

2.6.03 Date Installed/Recorded (C038—ten-character date): Enter the date the lift was installed or the date on which lift data were collected. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

2.6.04 Intake Depth (C044—five-digit integer): Enter the depth to the bottom of the pump bowls or intake, in feet below land surface. The value desired for this entry is the maximum distance the water level can be drawn down before the pump breaks suction.

Note: This should read ‘top of pump bowels or intake . . .’ where the well first loses suction.

WAWSC Standard and Practice is to enter depth to top of the pump intake.

2.6.05 Type of Power (C045—one-character code): Enter the code indicating the type of power used to power the pump.

Code	Type of Power	Code	Type of Power
D	Diesel engine	N	Natural-gas engine
E	Electric motor	S	Solar
G	Gasoline engine	W	Windmill
H	Hand	Z	Other (explain in Miscellaneous Remarks)
L	Liquid propane (LP) or butane engine		

2.6.06 Horsepower Rating (C046—seven-digit number): Enter the horsepower rating of the primary power source. Two decimal places are provided for small motors.

2.6.07 Manufacturer (C048—12-character text field): Enter the name of the company that manufactured the pump. Use meaningful abbreviations or acronyms, if needed, to fit the space. Company names should be entered in a consistent manner.

2.6.08 Serial Number (C049—12-character text field): Enter the serial number of the pump.

2.6.09 Power Company (C050—12-character text field): Enter the name of the company that supplies electricity, natural gas, or other fuel for the pump. Use meaningful abbreviations, if needed, to fit the space. Company names should be entered in a consistent manner.

2.6.10 Power Company Account Number (C051— ten-character text field): Enter the account number under which the power company stores information on power consumption at the site.

2.6.11 Power Meter Number (C052—12-character text field): Enter the meter number of the electric or gas meter which records the power consumption of the pump.

2.6.12 Pump Rating (C053—eight-digit number): Enter the rating of the pump as the volume of water lifted per unit of power consumed. The value should be expressed as millions of gallons of water per kilowatt-hour of electricity, cubic feet of natural gas, gallons of liquid fuel or engine hour, depending on the type of power coded under “lift data” above. (If the volume of water pumped is measured in other units, convert to millions of gallons.)

WAWSC Standard and Practice is to note actual units in Miscellaneous Remarks (C788).

2.6.13 Additional Lift (C255—three-digit integer): Enter the additional head (above land-surface datum) against which the pump works, in feet of water. For a sprinkler system for irrigation, this is the height of the sprinklers above land-surface datum plus the pressure at the sprinklers (in feet of water).

2.6.14 Company Maintaining Lift (C054—12-character text field): Enter the name of the person or company who is responsible for maintaining the pump, if known. Company names should be entered in a consistent manner.

2.6.15 Rated Capacity (C268—five-digit number): Enter the manufacturer’s pump capacity rating, in gallons per minute.

2.6.16 Standby Power (C056—one-character code): Enter the code that best describes the type of standby power available. The codes are the same as those listed in Type of Power (Subsection 2.6.05).

Code	Type of Power	Code	Type of Power
D	Diesel engine	L	Liquid propane or butane engine
E	Electric motor	N	Natural-gas engine
G	Gasoline engine	W	Windmill
H	Hand	Z	Other (explain in Miscellaneous Remarks)

2.6.17 Horsepower of Standby Power Source (C057—seven-digit number): Record the horsepower rating of the standby power source.

2.6.18 Web-ready Flag (C854—Mandatory—one-character code): Enter the Code that best describes the status and availability of the LIFT Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for LIFT Records are set manually by the person entering the data and do not appear on the WAWSC coding form. LIFT Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

2.7 Repair Records (REPR) (C762—Mandatory—Part of Primary Key—four-character code): REPR records store information about minor repairs at a site. Entry of a REPR record does not require prior entry of a CONS Record.

Subsection	Component Name	Component Number
2.7.01	Record Sequence Number	C165
2.7.02	Nature of Repair	C166
2.7.03	Date of Repair	C167
2.7.04	Name of Contractor	C169
2.7.05	Percent Performance Change	C170
2.7.06	Web-ready Flag	C855

2.7.01 Record Sequence Number (C165—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each REPR Record being coded and entered.

2.7.02 Nature of Repair (C166—Mandatory—one-character code): Enter the code that best describes the nature of the repair work.

Code	Nature of Repair	Code	Nature of Repair
B	Blocked off	O	Slotted or perforated
C	Cleaned	P	Plugged back
D	Deepened	S	Screen replaced

Code	Nature of Repair	Code	Nature of Repair
I	Pump intake lowered	Z	Other (explain in Miscellaneous)
L	Liner installed		Remarks)

2.7.03 Date of Repair (C167—ten-character date): Enter the date on which the repair work was completed. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

2.7.04 Name of Contractor (C169—12-character text field): Enter the name of the individual or company that did the work. Use meaningful abbreviations or acronyms, if needed, to fit the space provided. Individual and company names should be entered in a consistent manner.

2.7.05 Percent Performance Change (C170—three-digit integer): Enter the percentage by which the well performance was changed, as a result of the work. Use whole numbers only. If the performance was decreased, enter the value preceded by a minus sign (-).

2.7.06 Web-ready Flag (C855—Mandatory—one-character code): Enter the Code that best describes the status and availability of the REPR Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display
C	Conditional	Record not checked - No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display (default)

Note: Web-ready Flags for REPR Records are set manually by the person entering the data and do not appear on the WAWSC coding form. REPR Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

2.8 Spring Records (SPNG) (C764—Mandatory—Part of Primary Key—four-character code): SPNG Records are used to store information about the basic characteristics of a spring and are found only on General Spring Data Schedule Form No. 9-1904B. Entry of a SPNG record does not require prior entry of a CONS Record.

Subsection	Component Name	Component Number
2.8.01	Record Sequence Number	C727
2.8.02	Spring Name	C172
2.8.03	Spring Type	C173
2.8.04	Permanence	C174
2.8.05	Sphere of Discharge	C175
2.8.06	Improvements	C176
2.8.07	Number of Openings	C177
2.8.08	Flow Variability	C178
2.8.09	Basis for Variability	C179
2.8.10	Web-ready Flag	C856

2.8.01 Record Sequence Number (C727—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each SPNG Record being coded and entered.

2.8.02 Spring Name (C172—40-character text field): Enter the name by which the spring is known locally. Use meaningful abbreviations if needed.

2.8.03 Spring Type (C173—one-character code): Enter the code that best indicates the type of spring.

Code	Type of Spring	Code	Type of Spring
A	Artesian	K	Artesian and seepage or filtration
B	Perched and contact	L	Fracture and depression
C	Contact	P	Perched
D	Depression	O	Perched and fracture
E	Perched and depression	R	Perched and seepage or filtration
F	Fracture	S	Seepage or filtration
G	Geyser	T	Tubular - cave
H	Perched and tubular	Z	Other (explain in Miscellaneous Remarks)
J	Artesian and depression		

2.8.04 Permanence (C174—one-character code): Enter the code that best indicates the permanence of the spring.

Code	Permanence
E	Periodic —ebb and flow: spring normally has periods of relatively greater discharge at regular and frequent intervals. A periodic spring may be perennial or intermittent and resemble a geyser somewhat in its rhythmic action.
G	Geyser: spring that discharges at more or less regular intervals. Discharge is caused by expansive force of highly heated steam.
I	Intermittent: spring discharges only during certain periods but is dry at other times. Although all springs may be considered to be either perennial or intermittent, more descriptive detail can be included if it is available. The following characteristics describe special types of Intermittent springs that may be coded:
P	Perennial: spring discharges continuously.
R	Response to precipitation: spring that exists only after periods of rainfall.
S	Seasonal: spring that exists only during periods of high water levels.
Z	Other (explain in Miscellaneous Remarks)

2.8.05 Sphere of Discharge (C175—one-character code): Enter the code that best indicates the sphere into which the spring discharges.

Code	Sphere of Discharge
A	Subaerial
W	Subaqueous

2.8.06 Improvements (C176—one-character code): Enter the code that best indicates the type of improvements that have been constructed at or in association with the spring.

Code	Improvements	Code	Improvements
B	Boxed or small covered basin	N	None
C	Concrete basin	P	Pond
G	Gallery	R	Pipe (not for conduction)
H	Spring house	T	Trough
L	Lined	Z	Other (explain in Miscellaneous Remarks)

2.8.07 Number of Openings (C177—three-digit integer): Enter the number of openings through which water discharges from the spring. If the openings are too numerous to count, enter a value of 999.

2.8.08 Flow Variability (C178—three-digit integer): Where sufficient data are available to calculate or estimate the variability adequately, enter discharge variability of the spring, in percent, as expressed by the formula:

$$V = 100 \times [(a-b)/c],$$

where:

- V = variability, in percent ,
- a = maximum discharge,
- b = minimum discharge,
- c = average discharge.

2.8.09 Basis for Variability (C179—one-character code): Enter the code that best indicates the basis on which the variability of the spring was determined.

Code	Basis for Variability
A	Calculated from less than 1 year of continuous discharge record.
B	Calculated from 1 to 5 years of continuous discharge record.
C	Calculated from more than 5 years of continuous discharge record.
D	Calculated from intermittent measurements made over a period of more than 1 year.
E	Calculated from less than 1 year of record or estimated.
Z	Determined by other method (explain in Miscellaneous Remarks).

2.8.10 Web-ready Flag (C856—Mandatory—one-character code): Enter the Code that best describes the status and availability of the SPNG Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display (default)

Note: Web-ready Flags for SPNG Records are set manually by the person entering the data and do not appear on the WAWSC coding form. SPNG Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

Section 3—Water-Level Data Records

Water-Level Data Records consist of three record types that store data and information about water levels measured in wells and similar ground-water sites. Each record type is identified by a Water Level Entry Code and may contain one or more individual Water Level Records. The Primary Key for Water Level Records combines Source Agency Code (C004), Site ID (C001), Measurement Date (C235), and Measurement Time (C709). Of these, Source Agency Code, Site ID, and Measurement Date are mandatory.

Subsection	Component Name	Component Number
3.0.01	Agency Code	C004
3.0.02	Site ID	C001
3.0.03	Measurement Date	C235
3.0.04	Time Water Level Measured	C709
3.0.05	Water Level Entry Code	C243

3.01 Agency Code (C004—Mandatory—Part of Primary Key—five-character code): This field is populated by the GWSI software with the Agency Code (C004) from the Site Record.

3.02 Site ID (C001—Mandatory—Part of Primary Key—15-digit integer): This field is populated by the GWSI software with the Site Identification Number (C001) from the Site Record entry.

3.03 Measurement Date (C235—Mandatory—Part of Primary Key—eight-digit date): Enter the date on which the water level was measured. Dates are to be entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter ‘01’ in the spaces. Enter four digits for the year.

Note 1: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

Note 2: If the day is not entered only one water level can be entered for the month. Similarly, if the month and day are not entered, only one water level can be entered for the year. However, multiple water levels for a partial date may be entered if the water levels have different Measurement Times.

3.04 Time Water Level Measured (C709—Part of Primary Key—four-digit integer): Enter the time of day, when known, using the 24-hour clock, at which the water level was measured. Leave blank if not known.

Note: If Time is not entered, only one water level can be entered for a date.

3.05 Water Level Entry Codes (C243—Mandatory—one-character code): The Water Level Entry Code functions in much the same way as Record Type and allows the user to enter water levels referenced to different datums.

Code	Reference Datum
L	Land Surface Datum (LSD)
M	Measuring Point (MP)
S	Vertical Datum (MSL)

Note: Only one water-level Entry Code may be entered for each date and time.

WAWS Standard and Practice: Except for special cases, all water levels are to be entered referenced to Land Surface Datum (LSD) as covered in Section 3.0 of this report. Water levels referenced to a Measuring Point or to a Vertical Datum are included here should they be needed. Projects wishing to enter water levels from an alternative datum must check with the WAWS Ground-water Specialist for guidance and quality assurance purposes before entering data.

3.2 Water-Levels from Measuring Point (MP): (Water-level Entry Code C243 = M): These records store water-level data referenced to a measuring point on or near the well. Entry of a water level referenced to a MP requires the previous entry of Measuring Point Altitude (C325) or a combination of Altitude (C016) and MP height (C323).

Subsection	Component Name	Component Number
3.2.01	Sequence Number of MP	C248
3.2.02	Water Level from MP	C241
3.2.03	Status	C238
3.2.04	Method of Measurement	C239
3.2.05	Reference	C240
3.2.06	Accuracy	C276
3.2.07	Source	C244
3.2.08	Party ID	C246
3.2.09	Source Agency	C247
3.2.10	Web-ready Flag	C858

3.2.01 Sequence Number of MP Record (MPNT) (C248—Conditional—three-digit integer): Enter the record sequence number of the MPNT Record for the measuring point from which the water level was recorded. The sequence number defaults to “001” and must be changed if it is incorrect. This field is mandatory if a water level referenced to a measuring point is to be entered.

3.2.02 Water Level from MP (C241—Conditional—eight-digit number): Enter the measured water level in feet from the measuring point identified in Subsection 3.2.01 above. Water levels below the measuring point are unsigned, water levels above the measuring point are preceded by a minus sign (-). Precision can be carried to two decimal places.

Notes:

- (a) Water-level is mandatory unless associated with Status Codes C = Ice, D = Dry, F = Flowing, N = Discontinued, O = Obstruction, or W = Destroyed.
- (b) If the water level is above the MP and water level was determined enter the head or water level preceded by a minus sign (-) but do not enter a Status Code of “F” for Flowing.
- (c) If the water level is above the MP but the water level was not determined leave this field blank and enter a Status Code of “F” for Flowing.
- (d) If the well was being pumped and the water level was determined enter the water level and record a Status Code of “P” for Pumping.

Note: The GWSI Entry Routine will not display a warning message, but the Edit and Update Routines will generate a warning message that the water level and status may not be compatible.

- (e) If the well was being pumped and the water level was not determined leave this field blank and enter a Status Code of “P” for Pumping.

3.2.03 Status (C238—one-character code): Enter the code that best describes the status of the site or water level at the time the water level was measured. If no Status Code is entered, Water-Level (C241) is assumed to represent a static water level.

Code	Status of Water Level
A	Water level affected by atmospheric pressure
B	Water level affected by tide stage
C	Water level affected by ice (water in well was frozen, no water level measured)
D	Site dry
E	Site recently flowing
F	Site flowing
G	Nearby site tapping same aquifer flowing.
H	Nearby site tapping same aquifer recently flowing
I	Water being injected into the aquifer (Injector site).
J	Water being injected into the aquifer at a nearby site Note: The National User’s Manual limits use of this status to injector site monitor wells.
M	Well plugged and not in hydraulic contact with aquifer
N	Measurement discontinued
O	Obstruction encountered in the well
P	Site being pumped
R	Site recently pumped
S	Nearby site tapping same aquifer being pumped
T	Nearby site tapping same aquifer recently pumped
V	Foreign substance present on surface of water in well
W	Well destroyed
X	Water level affected nearby surface-water
Z	Other conditions affected the measured water level (explain in Miscellaneous Remarks)

Notes:

- (a) Water-level cannot be entered with Status Codes C = Ice, D = Dry, F = Flowing, N = Discontinued, O = Obstruction, or W = Destroyed.
 - (b) Water Level is allowed but may be compatible with Status Code P = Pumping.
- Note:** The GWSI Entry Routine will not display a warning message, but the Edit and Update Routines will generate a warning message that the water level and status may not be compatible.
- (c) Water Level is required for all Status Codes except those listed above in notes a and b.
 - (d) Statistics generated during tabling options will not include water levels where a Status Code is indicated.

3.2.04 Method of Measurement (C239—Mandatory—one-character code): Enter the code that best describes how the water level was measured.

Code	Method of Measurement	Code	Method of Measurement
A	Airline	M	Manometer
B	Analog or graphic recorder	N	Non-recording gage
C	Calibrated airline *	O	Observed**
E	Estimated	R	Reported, method not known
F	Transducer	S	Steel-tape
G	Pressure-gage	T	Electric-tape
H	Calibrated pressure-gage*	V	Calibrated electric tape*
L	Interpreted from geophysical logs	Z	Other (explain in Miscellaneous Remarks)

*Calibrated implies the accuracy of the method, equipment, or instrument has been checked and verified, usually by comparison to a concurrent water level measured with a steel tape.

**Required for Status Codes F = Flowing, N = Discontinued, and W = Destroyed; allowed for all others.

3.2.05 Reference (C240—one-character code): If the water level was obtained from a continuous recorder (analog or digital), enter the code that best indicates how the value was selected from the readings available for that day.

Code	Water level entered is the:
M	Daily maximum (deepest water level for the day)
N	Daily minimum (shallowest water level for the day)
X	Daily mean
Z	Monthly mean
A	12:00 noon reading
P	12:00 midnight reading

Note: Reference C240 does not appear on the WAWSC coding form.

3.2.06 Accuracy (C276—Conditional—one-character code): This field is populated by the GWSI Software on the basis of the number of significant figures entered for a new water level. However, this value may be over-ridden by manually entering a different accuracy code. This field is mandatory if Water Level (C241) was entered.

Code	Accuracy of water level
0	Nearest foot
1	Nearest tenth of a foot
2	Nearest one-hundredth of a foot
9	Not to nearest foot

Note: Starting with GWSI Version 4.4, a new rounding routine was implemented for water levels being pushed to the Web (Web-ready Flag C858= Y) whereby water levels are rounded according to their Water-Level Accuracy Codes (C276) and displayed as the value calculated during the rounding. A code of 9 indicates uncertainty greater than 1 foot but it does not imply any accuracy (for example to the nearest 5, 10, or 100 feet). Because there is no set accuracy associated with this code, water levels with this accuracy code are rounded to the nearest foot.

3.2.07 Source (C244—Mandatory—one-character-code): Enter the code that best describes the source of the water-level data. These codes are the same as those used for Source of Depth Data (C029) in the Site Record.

Code	Source of water-level data
A	Reported by other government agency - not owner
D	Driller's log or report
G	Private geologist, consultant, or university associate*
L	Interpreted from geophysical logs by personnel of source agency
M	Memory (owner, operator, driller): less reliable than reported ("O" and "R")*
O	Reported by the owner of the well
R	Reported by person other than the owner, driller, or other government agency*
S	Measured by personnel of reporting agency
Z	Other *

*Explain in Miscellaneous Remarks

3.2.08 Party ID (C246—six-character text): For water-levels measured by USGS Personal enter the last name or initials of the person measuring the water level. For water-levels measured by personnel from other agencies enter the abbreviation or acronym of the party's agency.

WAWSC Standard and Practice: see entry following Source Agency (C247) below.

3.2.09 Source Agency (C247—Mandatory—five-character code): Enter the Agency Code of the person measuring the water level. These are the same codes used for Agency (C004) in the Site Record. Codes and their meanings can be accessed by typing "?" in the field for Source Agency on the GWSI data entry screen.

WAWSC Standards and Practice: For water-levels measured by personnel from another agency:

Source Agency	Party ID	Agency Code
Washington Department of Ecology	WDOE	WA001
Washington Department of Health	WDOH	WA127
Washington Department of Natural Resources	WDNR	WA019
Driller	WDOE	WA001
Owner	OWNR	USGS

3.2.10 Web-ready Flag (C858—Mandatory—one-character code (licensing and reporting agency)): Enter the code that best describes the status and availability of the Water Level Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for Water-level Records are set manually by the person entering the data and do not appear on the WAWSC coding form. These flags also control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

3.3 Water-levels from Mean Sea Level (MSL): (Water Level Entry Code C243 = S) MSL records store water level data referenced to the sea level datum specified in Component C245 (Sea Level Datum). An entry of Water Level from MSL requires the entry of Sea Level Datum (C245).

Subsection	Component Name	Component Number
3.3.01	Water level from Sea Level	C242
3.3.02	Sea Level Datum	C245
3.3.03	Status	C238
3.3.04	Method of Measurement	C239
3.3.05	Reference	C240
3.3.06	Accuracy	C276
3.3.07	Source	C244
3.3.08	Party ID	C246
3.3.09	Source Agency	C247
3.3.10	Web-ready Flag	C858

Note: Office of Water Information Technical Memo 2002_01 states that the use of Mean Sea Level as a vertical datum shall be discontinued. The term Mean Sea Level is used in this report solely because it is the term used by the GWSI Water Level Data Entry Routine.

3.3.01 Water level from MSL (C242—Conditional— eight-digit number): Enter the measured water level, in feet, from Sea Level Datum (C245). Water levels below the datum are preceded by a minus sign (-), water levels above the datum are entered unsigned. Precision can be carried to two decimal places. An entry of Water Level from MSL requires and entry of Sea Level Datum (C245).

Notes:

- (a) Water-level is mandatory unless associated with Status Codes C = Ice, D = Dry, F = Flowing, N = Discontinued, O = Obstruction, or W = Destroyed.
- (b) If the well is flowing and water level was determined enter the altitude of the head or water level but do not enter a Status Code of “F” for Flowing.
- (c) If the well is flowing and the water level was not determined leave this field blank and enter a Status Code of “F” for Flowing.
- (d) If the well was being pumped and the water level was determined enter the water level and record a Status Code of “P” for Pumping.

Note: The GWSI Entry Routine will not display a warning message, but the Edit and Update Routines will generate a warning message that the water level and status may not be compatible.

- (e) If the well was being pumped and the water level was not determined leave this field blank and enter a Status Code of “P” for Pumping.

3.3.02 Sea Level Datum (C245—Mandatory—10-character code): Entry the code for the Sea Level Datum from which the water level altitude was determined.

Code	Datum
NGVD29	National Geodetic Vertical Datum of 1929
NAVD88	North American Vertical Datum of 1988
OLDAK	Old Alaska (Mainland) and Aleutian Island Datum
OLDPR	Old Puerto Rico and Virgin Island Datum
HILOCAL	Local Hawaiian Datum
ASLOCAL	Local American Samoa Datum
GULOCAL	Local Guam Datum
COE1912	COE Datum 1912

WAWSC Standard and Practice: Projects wishing to enter water levels from an alternative datum must check with the WAWSC Ground-water Specialist before entering data

3.3.03 Status (C238—one-character code): Enter the Code that best describes the status of the site or water level at the time the water level was measured. If no Status Code is entered Water Level (C242) is assumed to represent a static water level.

Code	Status of water level
A	Water level affected by atmospheric pressure
B	Water level affected by tide stage
C	Water level affected by ice (water in well was frozen, no water level measured)
D	Site dry
E	Site recently flowing
F	Site flowing
G	Nearby site tapping same aquifer flowing.
H	Nearby site tapping same aquifer recently flowing
I	Water being injected into the aquifer (Injector site).
J	Water being injected into the aquifer at a nearby site <i>Note: The National User's Manual limits use of this Status to Injector site monitor wells.</i>
M	Well plugged and not in hydraulic contact with aquifer
N	Measurement discontinued
O	Obstruction encountered in the well
P	Site being pumped
R	Site recently pumped
S	Nearby site tapping same aquifer being pumped
T	Nearby site tapping same aquifer recently pumped
V	Foreign substance present on surface of water in well
W	Well destroyed
X	Water level affected nearby surface-water
Z	Other conditions affected the measured water level (explain in Miscellaneous Remarks)

Notes:

(a) Water Level cannot be entered with Status codes C = Ice, D = Dry, F = Flowing, N = Discontinued, O = Obstruction, or W = Destroyed.

(b) Water Level is allowed but may not be compatible with Status code P = Pumping.

Note: The GWSI Entry Routine will not display a warning message, but the Edit and Update Routines will generate a warning message that the water level and status may not be compatible.

(c) Water Level is required for all status codes except those listed above in notes (a) and (b).

(d) Statistics generated during some tabling options will not include water levels where a status code is indicated.

3.3.04 Method of Measurement (C239—Mandatory—one-character code): Enter the code that best describes how the water level was measured.

Code	Method of Measurement	Code	Method of Measurement
A	Airline	M	Manometer
B	Analog or graphic recorder	N	Non-recording gage
C	Calibrated airline *	O	Observed**
E	Estimated	R	Reported, method not known
F	Transducer	S	Steel-tape
G	Pressure-gage	T	Electric-tape
H	Calibrated pressure-gage*	V	Calibrated electric tape*
L	Interpreted from geophysical logs	Z	Other (explain in Miscellaneous Remarks)

*Calibrated implies the accuracy of the method, equipment, or instrument has been checked and verified, usually by comparison to a concurrent water level measured with a steel tape.

**Required for Status Codes F = Flowing, N = Discontinued, and W = Destroyed: allowed for all others.

3.3.05 Reference (C240—one-character code): If the water level was obtained from a continuous recorder (analog or digital), enter the code that best indicates how the value was selected from the readings available for that day.

Code	Water Level entered is the:
M	Daily maximum (deepest water level for the day)
N	Daily minimum (shallowest water level for the day)
X	Daily mean
Z	Monthly Mean
A	12:00 noon reading
P	12:00 midnight reading

Note: Reference (C240) does not appear on the WAWSC coding form.

3.3.06 Accuracy (C276—Conditional—one-character code): This field is populated by the GWSI Software on the basis of the number of significant figures entered for a new water level. However, this initial value may be over-ridden by manually entering a different accuracy code. This field is mandatory if Water Level (C242) was entered.

Code	Accuracy of water level
0	Nearest foot
1	Nearest tenth of a foot
2	Nearest one-hundredth of a foot
9	Not to nearest foot

Note: Starting with GWSI Version 4.4, a new rounding routine was implemented for water levels being pushed to the Web (Web-ready Flag C858= Y) whereby water levels are rounded according to their Water-Level Accuracy Codes (C276) and displayed as the value calculated during the rounding. A code of 9 indicates uncertainty greater than 1 foot but it does not imply any accuracy (for example to the nearest 5, 10, or 100 feet). Because there is no set accuracy associated with this code, water levels with this accuracy code are rounded to the nearest foot.

3.3.07 Source (C244—Mandatory—one-character-code): Enter the code that best describes the source of the water-level data. The codes are the same as those used for Source of Depth Data (C029) in the Site Record.

Code	Source of water level data
A	Reported by other government agency - not owner
D	Driller's log or report
G	Private geologist, consultant, or university associate*
L	Interpreted from geophysical logs by personnel of source agency
M	Memory (owner, operator, driller): less reliable than reported ("O" and "R")*
O	Reported by the owner of the well
R	Reported by person other than the owner, driller, or another government agency*
S	Measured by personnel of reporting agency
Z	Other *

*Explain in Miscellaneous Remarks

3.3.08 Party ID (C246—six-character text): For water-levels measured by USGS personnel enter the last name or initials of the person measuring the water level. For water-levels measured by personnel from other agencies, enter the abbreviation or acronym of the party's agency.

WAWSC Standard and Practice: see entry following Source Agency (C247) below.

3.3.09 Source Agency (C247—Mandatory—five-character code): Enter the Agency Code of the person measuring the water level. These are the same codes used for Source Agency (C004) in the Site Record. Codes and their meanings can be accessed by typing "?" in the field for Source Agency on the GWSI data entry screen.

WAWSC Standards and Practice: For water levels measured by personnel from another agency:

Source Agency	Party ID	Agency Code
Washington Dept of Ecology	WDOE	WA001
Washington Dept of Health	WDOH	WA127
Washington Dept of Natural Resources	WDNR	WA019
Driller	WDOE	WA001
Owner	OWNR	USGS

3.3.10 Web-ready Flag (C858—Mandatory—one-character code (licensing and reporting agency)): Enter the Code that best indicates the status and availability of the Water-Level Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for Water-level Records are set manually by the person entering the data and do not appear on the WAWSC coding form. These flags also control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

Section 4-Miscellaneous Data Records

Miscellaneous Data Records consist of eleven record types that store data and information about a ground-water site that do not relate to other data records. Each record type may contain one or more individual data records. The Primary Key for Miscellaneous Data Records combines Agency Code (C004), Site ID (C001), Record Type Code, and Record Sequence Numbers.

Subsection	Component Name	Component Number
4.01	Agency Code	C004
4.02	Site ID	C001
4.03	Record Types	—

4.01 Agency Code (C004—Mandatory—Part of Primary Key—five-character code): This field is populated by the GWSI software with the Agency Code (C004) from the Site Record.

4.02 Site ID (C001—Mandatory—Part of Primary Key—15-digit integer): This field is populated by the GWSI software with the Site Identification Number (C001) from the Site Record.

4.03 Record Type (Mandatory—four-character code): Record Type Codes identify the category of data included in the each of the Miscellaneous Data Records.

Code	Record Type	Component Number	Code	Record Type	Component Number
OTID	Other-identifiers	C770	OCNT	Contact	C797
VIST	Site-visits	C774	NETW	Networks	C780
LOGS	Logs	C778	SPEC	Special Cases	C782
OTDT	Other Data Available	C772	MSVL	Miscellaneous Values	C784
OWNR	Owner	C768	COOP	Cooperator's Data	C786
RMKS	Remarks	C788			

WAWS Standard and Practice is to code and enter data only for Record Types OTID, VIST, LOGS, OTDT, OWRN, and RMKS which appear on the WAWS coding form. The other five Record Types (OCNT, NETW, SPEC, MSLV, and COOP) records do not appear on the WAWS coding form but are included here, should they be needed.

4.7 Contact Records (OCNT) (C797—Mandatory—Part of Primary Key—four-character code): OCNT records store data about whom, other than the owner, to contact for information on or access to the site. Due to privacy consideration, OCNT data cannot be used in the GWSI Detail Testing Routine.

Subsection	Component Name	Component Number
4.7.01	Record Sequence Number	C798
4.7.02	Date of Contact	C361
4.7.03	End Date of Contact	C373
4.7.04	Name	C362
4.7.05	Alias	C372
4.7.06	Phone	C363
4.7.07	Access to Name	C364
4.7.08	Address (1)	C365
4.7.09	Address (2)	C366
4.7.10	City	C367
4.7.11	State	C368
4.7.12	Zip	C369
4.7.13	Country	C370
4.7.14	Access to Phone/Address	C371

Note: USGS Policy is to not release Contact data for public water supplies or other sensitive installations and facilities to the general public.

WAWSC Standard and Practice is to not release OCNT data to the general public.

WAWSC Standard and Practice: Owner Contact data usually are not collected or entered by the WAWSC, and does not appear on the WAWSC coding form. However, due to the similarity of the OCNT and OWNR records, an OCNT record can be entered using one of the two OWNR Records that do appear on the WAWSC coding form.

4.7.01 Record Sequence Number (C798—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each OCNT Record being coded.

WAWSC Standard and Practice: The earliest known OCNT Record is assigned Record Sequence Number “001”. Subsequent OCNT Record Sequence Numbers are assigned based on Date of Contact (C361).

4.7.02 Date of Contact (C361—eight-character date): Enter the date that this contact was established. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI Software.

4.7.03 End Date of Contact (C373—eight-character date): Enter the date that this contact was terminated. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI Software.

4.7.04 Name (C362—Mandatory—64-character text field): Enter the name of the contact.

- (a) The format for entering an individual's name is: last name, first name, middle initial.
- (b) Meaningful abbreviations or acronyms may be used for the names of organizations, companies, and agencies.
- (c) For entities that represent multiple sites, care must be taken to ensure that the identical name, abbreviation, or acronym is used in all cases.
- (d) During screen entry when all or part of a new name is entered in the Name field (C362) previously entered versions of the name and associated alias will appear at the bottom of the screen along with a prompt that allows the user to continue searching, to select and enter a displayed name, or to quit searching.

4.7.05 Alias (C372—64-character text field): This field is populated by the GWSI software with information from the Contact's Name field (C362).

- (a) During screen entry when a new name is entered in the Name field (C362) previously entered versions of the name and associated alias will appear at the bottom of the screen along with a prompt that allows the user to continue searching, select and enter a displayed name, or quit searching.
- (b) During screen entry Contact's Alias (C372) can be searched for previously entered versions of an alias by leaving the Contact Name field (C362) blank and entering a carriage return. The Alias prompt will then appear at the bottom of the screen. If all or part of an alias is entered followed by a carriage return, previously entered versions of the alias and the associated name will be displayed at the bottom of the screen along with a prompt that allows the user to continue searching, select and enter a displayed name, or quit searching.

4.7.06 Phone (C363—24-character phone number): Enter the phone number of the Contact, including area code and extension.

4.7.07 Access to Name C364—Conditional—one-character code): Enter code that describes user access to the name of the contact. Entry of an access code is required if a Contact's Name was entered in Component (C362). Codes and their meanings are the same as for Access to Owner's Name (C352).

Code	Access	Data Available to
0	Public	USGS employees, cooperators, and the general public.
1	Cooperator	USGS employees and specified cooperators.
2	USGS	USGS employees only
3	District	USGS employees of the local Water Science Center (default).
4	Proprietary	Specific USGS employees only—check with Ground-Water Specialist before using.

Note: OCNT Name Records are not displayed on the Web and these codes control availability of the data for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

4.7.08 Address (1) (C365—64-character text field): Enter first line of the street address of the contact.

Note: Mailing and street address may not be the same.

4.7.09 Address (2) (C366—64-character text field): Enter second line of the contact's street address if necessary.

4.7.10 City (C367—64-character text field): Enter the name of the city in contact's street address.

4.7.11 State (C368—two-character code): Enter the two-character FIPS alpha code for the State in the owner's street address.

4.7.12 Zip (C369—10-character code): Enter postal zip code in the contact's street address.

4.7.13 Country (C370—48-character code): Enter the name of the country in the contact's street address.

4.7.14 Access to Phone/Address (C371—one-character code): Enter code that describes access to the Contact's phone number and address. Entry of an access code is required if a Phone Number (C363) or Address (C365/366) was entered. Codes and their meanings are the same as for Access to Owner's Name (C352).

Code	Access	Data Available to
0	Public	USGS employees, cooperators, and the general public.
1	Cooperator	USGS employees and specified cooperators.
2	USGS	USGS employees only
3	District	USGS employees of the local Water Science Center (default).
4	Proprietary	Specific USGS employees only—check with Ground-Water Specialist before using.

Note: OCNT Phone and Address Records are not displayed on the Web and these codes control the availability of the data for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

4.8 Network Records (NETW) (C780—Mandatory—four-character code): NETW Records are used to indicate if the site is an established data-collection station for water-quality, water-level, or withdrawal data. Use multiple entries to report more than one agency active at the site, variations or significant interruption data collection, changes in the frequency of data collection, or if more than one type of data are collected at the site.

Subsection	Component Name	Component Number
4.8.01	Record Sequence Number	C730
4.8.02	Type of Network	C706
4.8.03	Begin Year	C115
4.8.04	End Year	C116
4.8.05	Type of Analyses	C120
4.8.06	Source Agency	C117
4.8.07	Frequency of Collection	C118
4.8.08	Method of Collection	C133
4.8.09	Analyzing Agency	C307
4.8.10	Primary Network Site	C257
4.8.11	Secondary Network Site	C708
4.8.12	Web-ready Flag	C866

4.8.01 Record Sequence Number (C730—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each NETW Record being coded.

4.8.02 Type of Network (C706—Mandatory—two-character code): Enter the code that best describes the type data collected at the site.

Code	Type of Network
QW	Water Quality
WL	Water levels
WD	Pumpage or withdrawals

4.8.03 Begin Year (C115—Mandatory—four-digit integer): Enter the year in which the data collection began at the site. Use four digits.

4.8.04 End Year (C116—four-digit integer): Enter the year in which the data collection ended at the site. Use four digits. If the site is currently monitored, leave this field blank.

4.8.05 Type of Analysis (C120—two-character code—used only for QW sites): Enter the code that best describes the type of water-quality data generally collected at the site. This is a two-character field; if two types of water-quality data are collected, code both.

Code	Type of Analysis	Code	Type of Analysis
A	Physical properties	I	Common ions/trace elements
B	Common ions	J	Sanitary analysis and common ions
C	Trace elements	K	Pesticides and nutrients
D	Pesticides	L	Trace elements, pesticides, nutrients
E	Nutrients	M	All or most of the above
F	Sanitary analysis (organisms)	N	Common ions, trace elements and radioactive
G	Pesticides and common ions	P	Common, trace, physical
H	Nutrients and common ions	Z	Other (explain in Miscellaneous Remarks)

4.8.06 Source Agency (C117—Conditional—five-character code): Enter the code identifying the principal agency responsible for data collection at the site. These are the same codes used for Source Agency (C004) in the Site Record. Codes and their meanings can be accessed by typing “?” in the field for Source Agency on the GWSI data entry screen. This field is mandatory if data are collected at the same site by two different agencies.

4.8.07 Frequency of Collection (C118—one-character code): Enter the code that best indicates the frequency with which data are collected at the site.

Code	Frequency of Collection	Code	Frequency of Collection
A	Annually	S	Semiannually
B	Bimonthly (every 2 months)	W	Weekly
C	Continuously (recorder)	Z	Other (explain in Miscellaneous Remarks)
D	Daily	2	Every 2 years
F	Semimonthly (twice a month)	3	Every 3 years
I	Intermittently	4	Every 4 years
M	Monthly	5	Every 5 years
O	One time only	X	Every 10 years
Q	Quarterly		

4.8.08 Method of Collection (C133—one-character code—used only for WD sites): Enter the code that best describes the method by which water-withdrawal data are collected at the site.

Code	Method of Collection	Code	Method of Collection
C	Calculated from power-consumption records	U	Unknown
E	Estimated	Z	Other (explain in Miscellaneous Remarks C788)
M	Metered		

4.8.09 Analyzing Agency (C307—five-character code—used only for QW sites): Enter the code identifying the agency that performed the water-quality analyses for data from this site. These are the same codes used for Source Agency (C004) in the Site Record. Codes and their meanings can be accessed by typing “?” in the field for Source Agency on the GWSI data entry screen. This field is not attached to any data in the water-quality database. Any entries in this field should be checked against similar information entered in the QW database.

4.8.10 Primary Network Site (C257—one-character code): Enter the code that best describes the management level of the network. This field is mandatory if more than one network for an individual Source Agency (C117, Subsection 4.8.06) is entered.

Code	Primary Network	Code	Primary Network
1	National	3	Project
2	District	4	Cooperator

4.8.11 Secondary Network Site (C708—one-character code): This component provides each District with an additional field to better define District-specific networks. No allowable codes are defined at the national level, and each district can define codes for their individual systems.

Note: WAWSC does not have a set of codes for this field.

4.8.12 Web-ready Flag (C866—Mandatory—one-character code): Enter the code that best describes the status and availability of the NETW Record for display on the Web

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for NETW Records are set manually by the person entering the data and do not appear on the WAWSC coding form. NETW Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

4.9 Special-Cases Record (SPEC) (C782—Mandatory—four-character code): SPEC Records store data about multiple wells, ponds, tunnels, drains, and lateral or collector wells. The type of structure to which the data pertains is controlled by value entered for Type of Site (C002) in the Site Record.

Subsection	Component Name	Component Number
4.9.01	Record Sequence Number	C729
4.9.02	Number of Wells/Laterals in Group	C204/C220
4.9.03	Depth of Deepest Well	C205
4.9.04	Depth of Shallowest Well	C206
4.9.05	Method Wells Constructed	C207
4.9.06	Diameter of Group	C262
4.9.07	Length of Pond/Tunnel/Drain	C209
4.9.08	Width of Pond/Tunnel/Drain	C210
4.9.09	Depth of Pond/Tunnel/Drain	C211
4.9.10	Azimuth of Pond/Tunnel/Drain	C263
4.9.11	Dip of Tunnel	C264
4.9.12	Depth to Lateral	C221
4.9.13	Length of Lateral	C222
4.9.14	Diameter of Lateral	C223
4.9.15	Lateral Screen Mesh	C224
4.9.16	Web-ready Flag	C867

4.9.01 Record Sequence Number (C729—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each SPEC Record being coded.

4.9.02 Number Wells/Laterals In Group (C204, C220—three-digit integer): Enter the number of wells in the group.

Note: GWSI does not explain why this field has two component numbers. Author believes one number was intended to apply to wells and the other number to laterals (see Note under Subsection 4.9 Special-Cases Records above and Gnat Problem Report 16485, submitted 12-29-05).

4.9.03 Depth of Deepest Well (C205—three-digit number): Enter the depth of the deepest well in the group, in feet below land surface (Note: field range is .01 to 999).

Note: For Collector or Ranney-type wells, enter the depth of the central shaft.

4.9.04 Depth of Shallowest Well (C206—three-digit number): Enter the depth of the shallowest well in the group, in feet below land surface (field range is 0.01 to 999).

4.9.05 Method Wells Constructed (C207—one-character code): Enter the code that best indicates the how the wells were constructed.

Code	Method Wells Constructed	Code	Method Wells Constructed
D	Drilled	W	Drive-wash
J	Jetted	Z	Other (explain in Miscellaneous Remark)
V	Driven		

4.9.06 Diameter of Group (C262—seven-digit number): Enter the mean diameter of the well field, in feet; that is, the diameter of a circle that will enclose the well group.

4.9.07 Length of Pond, Tunnel, or Drain (C209—five-digit number): Enter, in feet, whichever of the following is applicable: the length of a tunnel or drain, the longer dimension of a noncircular pond, or the diameter of a circular pond.

4.9.08 Width of Pond, Tunnel, or Drain (C210—three-digit number): Enter, in feet, whichever of the following is applicable: the width of a drain or noncircular tunnel, the diameter of a circular tunnel, or the shorter dimension of a noncircular pond (field range is .01 to 999).

4.9.09 Depth of Pond, Tunnel, or Drain (C211—three-digit number): Enter, in feet, whichever of the following is applicable: the depth of a drain, the height of a noncircular tunnel, or the average depth of a pond (Note: field range is .01 to 999).

4.9.10 Azimuth of Pond, Tunnel, or Drain (C263— three-digit number): Enter the orientation of a tunnel or drain or of the long dimension of a noncircular pond, in degrees clockwise from due north: north = 0, east = 90, south = 180, and west = 270.

WAWS Standard and Practice: Use Miscellaneous Remarks Records (C788) indicate which ‘North’ was used (true, magnetic, grid, etc.) and the method or instrument used to determine the azimuth.

4.9.11 Dip of Tunnel (C264— three-digit number): Enter the dip of a tunnel or drain, in degrees above or below (-) the horizontal (field range is .01 to 90).

4.9.12 Depth to Lateral (C221—three-digit number): Enter the depth to the lateral, in feet below land surface (field range is 0.01 to 999).

4.9.13 Length of Lateral (C222—three-digit number): Enter the length of the lateral, in feet (field range is 0.01 to 999).

4.9.14 Diameter of Lateral (C223—three-digit number): Enter the diameter of the lateral, in inches (field range is 0.01 to 999).

4.9.15 Lateral Screen Mesh (C224— three-digit number): Enter the mesh of the lateral screen, in inches (field range is 0.01 to 999).

4.9.16 Web-ready Flag (C867—Mandatory—one-character code): Enter the Code that best describes the status and availability of the SPEC Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display (default)

Note: Web-ready Flags for SPEC Records are set manually by the person entering the data and do not appear on the WAWSC coding form. SPEC Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

4.10 Miscellaneous Values Record (MSVL) (C784—Mandatory—four-character code): MSVL Records store data that are not of national significance but are essential to local users. Entered values will not be edited except for format consistency.

Subsection	Component Name	Component Number
4.10.01	Record Sequence Number	C313
4.10.02	Miscellaneous Value 1	C251
4.10.03	Miscellaneous Value 2	C252
4.10.04	Miscellaneous Value 3	C253
4.10.05	Miscellaneous Value 4	C314
4.10.06	Web-ready Flag	C868

4.10.01 Record Sequence Number (C313—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each MSLV Record being coded.

4.10.02 Miscellaneous Value 1 (C251—seven-digit number): This is a seven-place real number with allowance for two decimal places.

4.10.03 Miscellaneous Value 2 (C252—11-character text): This is an eleven-place character-type component.

4.10.04 Miscellaneous Value 3 (C253—10-character text): This is a ten-place character-type component.

4.10.05 Miscellaneous Value 4 (C314—seven-digit integer): This is a seven-place integer-type component.

4.10.06 Web-ready Flag (C868—Mandatory—one-character code): Enter the Code that best describes the status and availability of the MSLV Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display (default)

Note: Web-ready Flags for MSLV Records are set manually by the person entering the data and do not appear on the WAWSC coding form. MSLV Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

4.11 Cooperator's Data Records (COOP) (C786—Mandatory—four-character code): COOP Records store data not included on other schedules.

Subsection	Component Name	Component Number
4.11.01	Record Sequence Number	C734
4.11.02	Cooperator's Site ID	C213
4.11.03	Registration Number	C214
4.11.04	Inspection Status	C215
4.11.05	Reason Unapproved	C216
4.11.06	Inspection Date	C217
4.11.07	Remarks	C218
4.11.08	Web-ready Flag	C869

4.11.01 Record Sequence Number (C734—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each COOP Record being coded.

4.11.02 Cooperator's Site ID (C213—10-character field): Enter the name or identification number used by the cooperating agency for the site, if different from the local well number.

4.11.03 Registration Number (C214—seven-character text): Enter the registration or license number of the individual or firm that constructed the well or other type of site. Blanks are allowed in this field but the characters colon (:), pound (#), asterisk or star (*), backslash (\), double quotes ("), and carrot (^) are not.

4.11.04 Inspection Status (C215—two-character code): Enter a code indicating whether or not the site has been inspected and approved. Cooperators can create their own set of meaningful codes, depending on the requirements of their agency.

4.11.05 Reason Unapproved (C216—one-character code): Enter a code indicating the reason why an inspected and unapproved site was not approved. Cooperators can create their own set of meaningful codes, depending on the requirements of their agency.

4.11.06 Inspection Date (C217—10-character date): Enter the date on which the site was inspected by cooperators personnel. Dates are entered using the format MM-DD-YYYY where MM is the month, DD is the day of month, and YYYY the year. Use leading zeros for month or day values less than 10. If the month or day is not known, enter “01” in the spaces. Enter four digits for the year.

Note: Values for month, day, and year are entered by the user; the dashes (-) are supplied by the GWSI software.

4.11.07 Remarks (C218—25-character text field): Enter any pertinent cooperators comments or additional data.

4.11.08 Web-ready Flag (C869—Mandatory—one-character code): Enter the Code that best describes the status and availability of the COOP Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display (default)

Note: Web-ready Flags for COOP Records are set manually by the person entering the data and do not appear on the WAWSC coding form. COOP Records are not currently displayed on the Web these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

Section 7- Observation Well Heading Record (OBS)

The Observation Well Heading Records (OBS) are used to specify headings for tabular water-level reports. The Primary Key for OBS records combines the Source Agency Code (C004), Site ID (C001), and Record Sequence Number (C315).

Subsection	Component Name	Component Number
7.01	Agency Code	C004
7.02	Site ID	C001
7.03	Record Sequence Number	C315
7.04	Heading Line	C270
7.05	Web-ready Flag	C873

Note: GWSI data entry routine uses the abbreviation OBS, the GWSI National Coding Manual uses OBHD.

7.01 Agency Code (C004—Mandatory—Part of Primary Key—five-character code): This field is populated by the GWSI software with the Agency Code (C004) from the Site Record.

7.02 Site ID (C001—Mandatory—Part of Primary Key—15-digit integer): This field is populated by the GWSI software with the Site Identification Number (C001) from the Site Record.

7.03 Record Sequence Number (C315—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each OBS Record coded.

7.04 Heading Line (C270—115-character text field): Enter the Observation Header Line as it is to be printed. This is a free-formatted text field and will not be edited except to remove leading, redundant, internal, and trailing blanks. The Header Line cannot exceed 115 characters per line, but more than one entry can be made per site (no limit on the number of entries).

7.05 Web-ready Flag (C873—one-character code): Enter the Code that best indicates the status and availability of the OBS Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked - No Web display
P	Proprietary	Data restricted to specific USGS employees only— No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center— No Web display (default)

Note: Web-ready Flags for OBS Records are set manually by the person entering the data. OBS Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

Section 8- Hydraulic Data Records

Hydraulic Data Records consist of two record types that store data related to the hydraulics of the aquifer. Each record type may contain one or more individual data records. The Primary Key for Hydraulic Data Records combines Agency Code (C004), Site ID (C001), Record Type Code, and Record Sequence Numbers.

Subsection	Component Name	Component Number
8.01	Source Agency	C004
8.02	Site ID	C001
8.03	Record Type	-

8.01 Agency Code (C004—Mandatory—Part of Primary Key—five-character code): This field is populated by the GWSI software with the Agency Code (C004) from the Site Record.

8.02 Site ID (C001—Mandatory—Part of the Primary Key—fifteen-digit integer): This field is populated by the GWSI software with the Site Identification Number (C001) from the Site Record.

8.03 Record Type (Mandatory—four-character code): Record Type Codes identify the type of data included in each of the Hydraulics Data Records.

Code	Type of Record	Component Number
HYDR	Hydraulic Record	C744
COEF	Coefficient Record	C746

8.1 Hydraulic Records (HYDR) (C744—Mandatory—Part of Primary Key—four-character code): HYDR Records store aquifer and test interval data about the Geohydrologic Unit to which the formation hydraulics data apply and the means by which the data were obtained.

Subsection	Component Name	Component Number
8.1.01	Record Sequence Number	C790
8.1.02	Hydraulic Unit	C100
8.1.03	Depth to Top of Interval	C101
8.1.04	Depth to Bottom of Interval	C102
8.1.05	Hydraulic Unit Type	C103
8.1.06	Remarks	C104
8.1.07	Source Agency	C305
8.1.08	Web-ready Flag	C874

8.1.01 Record Sequence Number (C790—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each HYDR Record being coded. This number becomes the Parent Sequence Number of any Coefficients Records associated the HYDR Record.

8.1.02 Hydraulic Unit (C100—Mandatory—eight-character code): Enter the eight-character Geohydrologic Unit Identifier to which the formation hydraulics data apply ([appendix 3](#)).

8.1.03 Depth to Top of Interval (C101—seven-digit number): Enter the depth, in feet below land surface, to the top of the tested interval.

8.1.04 Depth to Bottom of Interval (C102—seven-digit number): Enter the depth, in feet below land surface, to the top of the tested interval.

8.1.05 Hydraulic Unit Type (C103—Mandatory—one-character code): Enter the code that best indicates the hydraulic character of the unit tested.

Code	Hydraulic Unit Type
A	Aquifer
S	Confining layer

8.1.06 Remarks (C104—40-character text field): Briefly describe the means by which the formation hydraulics data were determined. Meaningful abbreviations may be used.

Examples:

Distance-drawdown, 3 wells

Specific-capacity test

Recovery, straight-line solution

8.1.07 Source Agency (C305—five-character code): Enter the Agency Code of the organization that collected the hydraulic data. These are the same codes used for Source Agency (C004) in the Site Record. Codes and their meanings can be accessed by typing “?” in the field for Source Agency on the GWSI data entry screen.

8.1.08 Web-ready Flag (C874—Mandatory—one-character code): Enter the code that best describes the status and availability of the HYDR Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display (default)

Note: Web-ready Flags for HYDR Records are set manually by the person entering the data and do not appear on the WAWSC coding form. HYDR Records are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

8.2 Coefficients Records (COEF) (C746—Mandatory—Part of Primary Key—four-character code): COEF Records store aquifer and hydraulic coefficients determined by the test data for the specified HYDR record. Definitions of the COEF components in the following Subsections are from U.S. Geological Survey Water-Supply Paper 1988 (U.S. Geological Survey, 1974).

Subsection	Component Name	Component Number
8.2.01	Parent Sequence Number	C099
8.2.02	Record Sequence Number	C790
8.2.03	Transmissivity	C107
8.2.04	Horizontal Conductivity	C108
8.2.05	Vertical Conductivity	C109
8.2.06	Storage Coefficient	C110
8.2.07	Leakance	C111
8.2.08	Diffusivity	C112
8.2.09	Specific Storage	C113
8.2.10	Barometric Efficiency	C271
8.2.11	Porosity	C306
8.2.12	Web-ready Flag	C875

8.2.01 Parent Sequence Number (C099—Mandatory—part of Primary Key—three-digit integer): Enter the Record Sequence Number (C790) of the HYDR Record with which the COEF Record is associated.

8.2.02 Record Sequence Number (C790—Mandatory—Part of Primary Key—three-digit integer): Enter a Record Sequence Number for each COEF Record being coded. The numbers need not be in sequence, but each can be used only once for each site.

8.2.03 Transmissivity (T) (C107—seven-digit number, three decimal places): Enter the computed transmissivity (T), in feet squared per day. Transmissivity is the rate at which water of the prevailing kinematic viscosity is transmitted through the unit width of the geohydrologic unit under a unit hydraulic gradient.

8.2.04 Horizontal Conductivity (KH) (C108—12-digit number, five decimal places): Enter the computed horizontal hydraulic conductivity (K), in feet per day. Hydraulic conductivity of the medium is the volume of water at the existing kinematic viscosity that will move in unit time under a unit hydraulic gradient through a unit area measured at right angles to the direction of flow.

8.2.05 Vertical Conductivity (KV) (C109—12-digit number, five decimal places): Enter the computed vertical hydraulic conductivity (K), in feet per day.

8.2.06 Storage Coefficient (S) (C110—eight-digit number, seven decimal places): Enter the computed storage coefficient (S), dimensionless. The storage coefficient is the volume of water a geohydrologic unit releases from or takes into storage per unit surface area of the geohydrologic unit per unit change in head. In an unconfined water body, the storage coefficient is virtually equal to the specific yield.

8.2.07 Leakance (C111—nine-digit number, four decimal places): Enter the computed leakance, in units of 1/day. Leakance is equal to the Vertical Conductivity (C109) divided by the thickness of the unit and is the inverse of the coefficient of leakage.

8.2.08 Diffusivity (T/S) (C112—13-digit integer): Enter the computed hydraulic diffusivity in feet squared per day. Diffusivity is equal to the Transmissivity (C107) divided by the Storage Coefficient (C110).

8.2.09 Specific Storage (SS) (C113—10-digit number, nine decimal places): Enter the computed specific storage, dimensionless. The Specific Storage is equal to the Storage Coefficient (C110), divided by the thickness of the geohydrologic unit. Specific Storage is the volume of water the Geohydrologic Unit releases per unit volume per unit change in head.

8.2.10 Barometric Efficiency (BE) (C271—three-digit integer): Enter the efficiency of the aquifer's response to barometric changes, in percent. The barometric efficiency of an aquifer is the ratio of water-level change to atmospheric pressure change. While it is theoretically possible for the barometric efficiency of an aquifer to range from 0–100 percent, barometric efficiency typically ranges from 20–75 percent. A warning will be displayed if the entered value is outside the typical range, but will be allowed if it is within the theoretical range.

8.2.11 Porosity (C306—four-digit number, three decimal places): Enter the porosity as a decimal fraction; include the decimal point. At most, three digits are allowed. The porosity of the Geohydrologic Unit is its property of containing interstices or voids and may be expressed quantitatively as the ratio of the volume of its interstices to its total volume.

8.2.12 Web-ready Flag (C875—one-character code): Enter the Code that best indicates the status and availability of the COEF Record for display on the Web.

Code	Status	Description
Y	Web-ready	Record checked and ready for Web display (default)
C	Conditional	Record not checked—No Web display
P	Proprietary	Data restricted to specific USGS employees only—No Web display
L	Local Use	Data restricted to USGS employees of the local Water Science Center—No Web display

Note: Web-ready Flags for COEF Records are set manually by the person entering the data. COEF Records currently are not displayed on the Web and these flags control the availability of the records for retrieval by the GWSI Retrieval/Tabling Routine (U.S. Geological Survey, 2005a).

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**Guidelines for Coding and Entering Ground-Water Data Into the Ground-Water Site Inventory Data
Base Version 4.6, U.S. Geological Survey, Washington Water Science Center**

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